

LEARNING STYLE AND PREFERRED MODE OF DELIVERY OF ADULT
LEARNERS IN WEB-BASED, CLASSROOM, AND BLENDED TRAINING

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The purpose of this study was to investigate the association between adult learners' preferred learning style and preference for delivery mode. The subjects (n=61) were technical and billing support call center employees from an Internet company in Dallas, Texas. The participants were randomly assigned to one of six groups and given Kolb's Learning Style Inventory to assess their preference for learning style. They received training on three modules of "Influencing Others Positively", with each module delivered via one of three methods (web-based, classroom, and blended). Participants were also administered two surveys. The first survey collected demographic information and asked which method that they expected they would prefer. The second survey was administered after the course and asked them to rank their preferences for delivery method. It was hypothesized that learning style would be significantly associated with preference for delivery method.

The data was analyzed using descriptive statistics and a chi-square test of independence for the variables learning style and preferred mode of delivery. Although the chi-square test of independence did not produce statistical significance, some interesting trends were identified in the data. Specifically, a majority of the participants preferred a blended approach to training delivery (a combination of self-paced web-

based training and classroom group exercises). No Divergers preferred classroom training and no Accommodators preferred web-based training. Additionally, a logistic regression analysis indicated that Assimilators were six times more likely than Divergers to prefer a blended approach to training ($p=.10$).

Further studies should utilize other learning style theories, explore different types of learning outcomes and delivery methods, and include a larger sample from different organizations. Training needs assessments should include learning style inventories as part of the audience analysis prior to training development.

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CHAPTER 1

INTRODUCTION

Background

In recent years there has been significant interest in the use of e-learning to replace or enhance traditional classroom learning in corporate training. Drucker (2000) explained that new technologies make it possible for people to learn wherever and whenever they want instead of having to bring them to a central location away from their work. The Verio Performance Enhancement Center (VPEC) of NTT/VERIO has utilized SmartForce, The E-Learning Company, to provide employees with web-based training (WBT) for professional development through technical, business, and leadership courses. These courses are taken voluntarily by interested employees and do not utilize any type of instructor interaction or classroom instruction. Along with offering these web-based training courses, VPEC has also endeavored to develop its own internal WBT courses. The cost to the company for delivering these courses is significant. Like most companies, NTT/VERIO is looking at the most effective way to spend the budget dollars to train its employees.

The potential benefits for NTT/VERIO and all companies to offer WBT are numerous. Driscoll (1998) offered several advantages for deploying web-based training in corporate settings. First it can reduce travel related expenses. Secondly, courses can be administered locally and made available to virtually any location. Additionally, because

information and job skills change at a swift pace, WBT offers the ability to update and revise information rapidly.

Although many companies see the potential benefits of deploying WBT, the move to replace classroom training needs serious consideration. Anderson (2002) explained that there are five factors that should be addressed in order for e-learning programs to be successful in an organization—culture, content, capability, cost, and clients. The culture of the company needs to support a change to e-learning. The result of implementing e-learning in a company means putting the control of employee development into the hands of the employee, taking it away from management. The content of the training should also be appropriate for e-learning. For example, web-based training should supplement, not replace, attitudinal and psychomotor skills training. The organization should also have the technological capability to deliver and administer e-learning, as well as the ability to fund the cost of deploying it. Finally, the clients (employees), a critical factor in e-learning acceptance, may not prefer or be suited for web-based training. Their attitudes and awareness level of e-learning need to be addressed to assure that they will embrace the new training format.

Once a company decides to move forward with e-learning as an alternative to classroom training, it is important to fully understand the various types of technology-enabled delivery systems available to them. For the most part, training professionals may think of web-based training or traditional classroom instruction as the two primary delivery choices in corporate training departments today. However, the Commission on Technology and Adult Learning (2000) explained that alternatives to classroom-based learning could comprise the following: computer-based training (CBT) video

conferencing, interactive TV lectures, satellite-delivered instruction, and virtual education networks. Abernathy (2001) also included aspects of mobile learning, which utilizes the use of handheld computers and Personal Digital Assistants (PDAs) to deliver instruction.

More recently, there has been an effort to combine aspects of several of these technologies along with classroom instruction into a delivery method that has come to be known as blended training (BT). Hofmann (2001) described BT as reviewing a learning program, chunking it into modules, and determining the best medium to deliver the modules. It could include traditional classroom or lab settings, CD-ROM, asynchronous web-based training, synchronous web-based training, or performance support tools. Zenger and Uehlein (2001) explained that blended learning is an appropriate delivery method for teaching complex performance skills, which would include soft-skills.

Lewis and Orton (2000) explained that there are several factors for any innovation to be accepted by a target audience. One of these factors is compatibility, or the degree to which an innovation is viewed as consistent with existing values, past experiences, or the needs of the potential adopters. In other words, if it is compatible with the learner, it is more likely to be adopted. This agrees with one of the factors mentioned earlier, that e-learning will be successful within a corporation if there is a careful consideration of the employees' attitudes and preferences for this new type of delivery method. One of these considerations is how adults learn effectively. Driscoll (1998) explained that one of the important characteristics of adult learners is their preferred learning style.

In order to make an informed decision about the type of e-learning to use, one should look to research to find the path through the maze. There is a large amount of

research focused on learning style in traditional classroom settings and distance learning settings. These research studies have indicated that students can learn just as well using technology to supplement or replace classroom instruction. Russell (1997) compiled 355 research reports, summaries, and papers from 1928 to 1998 which reported no significant difference in achievement outcomes when the different technologies used to deliver instruction were compared to alternative methods of teaching. These studies mainly focused on the technology of delivery, such as learning via the computer versus learning via a videotape or audiotape. Furthermore, these studies demonstrated that e-learning can be just as effective as classroom instruction and students can learn equally well from all different instructional technology. Since an individual's learning is not denigrated from utilizing any number of different technologies, future research questions should be directed away from which delivery vehicle is better than another and instead focus on the reasons *why* individuals may prefer one mode of delivery over another. No research was found which examined the relationship between an individual's learning style and the person's preferred mode of delivery with the delivery methods of web-based training, blended training, and traditional instruction.

Significance

Van Buren (2001) estimated that in the year 2002, approximately 18% of training delivery will take place via some form of learning technology. Other estimates have placed that number as high as 90% but more realistically at around 20-25% (Sloman, 2001). In other words, if the e-learning trend continues, there will be more and more people learning independently, outside the confines of a traditional classroom with instructors and peers. The Commission on Technology and Adult Learning (2000)

explained that “training” in today’s workplace is evolving into “learning solutions”, because e-learning is allowing just-in-time delivery of information and performance support which was not possible before without the technology to deliver it.

Research has uncovered a need to identify the individual factors which contribute to student achievement when using technology to deliver instruction (Bernt & Bugbee, 1993; Biner et al., 1995; Coggins, 1989; Weisner, 1983). While many studies looked at learning style and achievement, few studies have examined how learning styles relate to the preferred mode of delivery. Those studies which specifically investigated preferred mode of delivery examined it against preferred instructional technologies such as print or video. There is a gap in the literature in comparing learning style with an individual’s preference for the delivery modes of web-based training, traditional instruction, or blended learning. This research was significant for instructional designers and for those who make decisions about purchasing web-based training as it would help identify those individuals with learning styles that work best with common delivery methods in corporate training departments.

Purpose of the Study

The purpose of this study was to investigate the relationship between preferred learning style and preference for training delivery mode. This study was designed to investigate the usefulness of considering an individual’s learning style as a consideration for deciding on the vehicle to deliver training. Additionally, this study utilized customer service representatives at a large Internet company taking a course via three different modes of delivery: web-based training, traditional classroom instruction, and blended

learning. It expands on previous research in the literature examining adult learner characteristics that influence the outcome of a training initiative.

The results of this study might prompt training departments to give employees a learning style assessment instrument prior to the design of training and as a part of an audience analysis. This can help training departments determine the most cost-effective and learner-centered strategy to deliver the content.

Statement of the Problem

New technologies offer ways to deliver training which is independent of instructor-student interaction. Web-based training allows individuals to learn completely independent of interaction with instructor or peers, while blended learning can incorporate aspects of both classroom instruction and web-based training. The effectiveness of both of these alternative methods to traditional instruction can largely depend on the student's preference for one mode or the other. The problem that this study investigated was the need to identify factors which were related to the student's preference for a particular delivery method. Specifically, the characteristic investigated was preferred learning style.

As trainers and instructional designers become more "providers of learning solutions" and less of "training delivery agents", they need to understand those factors which would likely result in a successful training evolution. The choice of delivery method requires more than just an examination of the type of content to be delivered. It requires the trainer or instructional designer to give careful consideration of the characteristics of the individual learners participating in the training.

Research Hypothesis

1. Hypothesis (H1): Adult learners' preferred mode of delivery is dependent on their preferred learning style.

Delimitations

1. This study was limited to the study of preferred mode of delivery and does not include achievement outcome as an indicator of success in the course. The subjects in the study will not receive a pre-test or post-test to measure achievement of the topic “influencing others positively”. Due to the subjects’ lack of exposure to the course, it is assumed that they are unfamiliar with the information presented in the modules.
2. This study was limited to the delivery modes of web-based training (self-paced), blended learning, and traditional instruction. These methods were chosen because of their relevance to the field of corporate training and because blended learning is considered a relatively new training delivery option. Other delivery methods such as synchronous or asynchronous web-based training or videotape were not investigated.

Limitations

This study was limited to the Customer Support Representatives at NTT/VERIO in Dallas, Texas. This group was chosen because it was convenient to the researcher’s place of employment at the time of the study.

Definitions of Terms

Abstract Conceptualization: Logical analysis of ideas, systematic planning, acting on intellectual understanding of a situation (Kolb, 1984).

Accommodator: Learning style which emphasizes input by concrete experience and processing by active experimentation (Kolb, 1984).

Active Experimentation: Ability to get things done, risk taking, influence people and events through action (Kolb, 1984).

Assimilator: Learning style which emphasizes input by abstract conceptualization and processing by reflective observation (Kolb, 1984).

Asynchronous Learning: Interaction between student and teacher that does not take place in real-time. Interaction may take the form of E-mail or posting on a message board.

Blended Training: Learning events which combine aspects of online and face-to-face instruction (E-Learning Glossary, 2001). In this study, blended learning refers to a combination of self-paced web-based training along with instructor facilitated classroom exercises. It is also referred to as Blended Learning or a Blended Approach.

Classroom Training: Learning events which include face-to-face instruction and instructor facilitated exercises. It does not include any web-based or computer-based learning.

Cognitive Style: Refers to an individual's way of processing information (Sternberg & Zhang, 2000).

Concrete Experience: Learning from specific experiences, relating to people, and sensitivity to feelings and people.

Converger: Learning style which emphasized input by abstract conceptualization and processing by active experimentation (Kolb, 1984).

Delivery Mode: The vehicle by which training is delivered to the participant. In this study the modes of traditional instruction, web-based training, and blended learning are examined.

Diverger: Learning style which emphasizes input by abstract conceptualization and processing by reflective observation (Kolb, 1984).

E-learning: Covers a wide set of applications and processes, such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, and CD-ROM (E-Learning Glossary, 2001).

Experiential Learning: "The process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb 1984, p. 41).

Grasping: The method of input of information to be learned, either through concrete experience or abstract conceptualization.

Learning Style: The individual's characteristic means of perceiving and processing information (Kolb, 1984).

Reflective Observation: Careful observation before making a judgment, viewing things from different perspectives, and looking for the meaning of things.

Synchronous Learning: Learning that takes place in real-time with student and instructor interacting via discussion boards or two-way video.

Transformation: The method of processing information, either by reflective observation or active experimentation.

Web-based Training: A method of delivery that can be delivered over the Internet or a company's Intranet. For this study, it is defined as a web-based, multimedia method that features drill and practice, simulations, reading, and question and answer (Driscoll, 1998). Also, for this study it is self-paced and does not have any instructor-student interaction and is interchangeable with the term computer-based training.

Summary

The landscape of corporate training has changed dramatically with the introduction and continuous improvement of technologies to deliver learning solutions. Because training departments are continuing to have every budget dollar stretched, it becomes critical to make every training effort the most effective it can be. Adult learners may prefer one delivery method over another due to differences in individual learning styles. The challenge for instructional designers is to develop and deliver training which will most effectively accommodate the various characteristics of the learners, including their preferred learning style.

The remainder of this study included the review of literature, the methodology and procedures of the study, the findings, and summary and recommendations. The next chapter, the review of literature, investigated and synthesized the literature surrounding learning style models, instructional technology and design, and training delivery mode preference. The third chapter of this study was the methodology chapter. It examined the population and sample of the study along with the instrumentation, data collection, and analysis procedures. The fourth chapter, the findings, presented the findings of this study in table and narrative format. The fifth chapter presented the summary, conclusions, and recommendations of this study.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

Rapid change in the area of technology is a hallmark of this generation. Browsing through training and development literature, one becomes keenly aware of the influence that technology has made and is continuing to make in this field. Many organizations are currently using or seriously considering web-based training to supplement or replace traditional classroom instruction. Training professionals are also forced to expand their traditional roles as instructional designer, instructional developer, trainer, and materials supporter. They must become individuals who can orchestrate the mix of learning technologies into traditional paradigms (Wentling et al., 2000).

The purpose of this study was to investigate the association between adult learners' preferred learning style and their preferred mode of delivery. The hypothesis is that adult learners' preferred mode of delivery is dependent on their preferred learning style. This chapter will examine the theoretical and empirical evidence for studying the relationship between learning style and preferred mode of delivery. It begins with a review of the literature related to instructional technology and instructional design. The next section reviews the relevant literature concerning learning style theory and models. The last section reviews the literature surrounding learning styles and training delivery.

Instructional Technology and Instructional Design

Over the past several decades the development of technologies has increased the speed of storing, transferring, and sharing of information over different time zones and

vast distances. The impact on education and training has been significant. Race and Brown (1995) indicate that some of the reasons behind the rapid increase in distance education in recent years include: lower cost of computer hardware, software and telecommunications networking; younger generations familiar with technology and having less fear of it; and more pleasing interfaces such as audio and video. As technological capabilities expand, the delivery of electronic instruction potentially promises organizations a reduction of costs, worldwide accessibility, and flexibility of developing its employees. Brown (2000) explained that some companies have experienced cost savings of 40 to 75 percent due to reduced travel expenses, instructor fees, facilities costs, and lost time on the job. This section describes the history of instructional technology and the principles of instructional design that good web-based training should possess.

Types of Web-based Training

Web-based training has its roots in the development of instructional technology. Clark (1994) described technology in two different ways. First, any of the tools that are used to provide access to training such as computers, books, or telecommunication networks are referred to as delivery technologies. Other technologies that enhance the experience of the learner such as tests, exercises, or group and individual projects are referred to as instructional technologies. In this study, however, instructional technology was used to refer to both the tools to deliver and the tools to enhance the learning.

The occurrences of technology in education and training literature have taken on several different names. Cone and Robinson (2001) used the terms e-learning, distance education, and online learning interchangeably. Other terms used for distance education

have been virtual learning, computer mediated education, computer-assisted instruction, tele-learning, and web-based training (Belanger & Jordan, 2000). The precursor to web-based training was computer-based training. In the early days of computer-based training there wasn't much emphasis placed on the instructional design aspect of the learning experience. Kruse (2000) described CBT during its infant stage as nothing more than electronic tutorials. They came to be known as "page turners" because few designers utilized simulations, exercises, and games. The learner was expected to read pages of text on a screen, similar to flipping through a book. As the popularity of the World Wide Web increased, web-based training programs followed the same pattern with information documents such as reference guides, articles, and student manuals being made accessible through the Internet. The introduction of videodiscs and multimedia CD-ROMs has given designers the ability to add video, audio, graphics, and animation. However, with all the bells and whistles available, much of the e-courses available still lacked sound instructional design (Kruse, 2000).

Driscoll (1998) explained that there are four different types of web-based training: Web/Computer-Based Training (W/CBT), Web/Electronic Performance Support Systems (W/EPSS), Web/Virtual Asynchronous Classroom (W/VAC), and Web/Virtual Synchronous Classroom (W/VSC). The type of training used in this study was W/CBT. W/CBT has the characteristics of being self-paced, emphasize individual learning, being highly structured, and having discrete units of instruction (Driscoll, 1998). This type of training is also known as distributed learning because it is self-paced and there might not be an instructor to interact with, even through a time-delayed communication channel such as e-mail or discussion boards (Belanger & Jordan, 2000). Driscoll (1998) explained

that W/CBT and traditional computer-based training have many things in common, but there are some differences. For CBT, the resources are limited to what is on the CD-ROM, but in WBT, the World Wide Web and other company resources can be accessed. Another difference is that WBT can offer the ability to use communication tools such as e-mail or online bulletin boards. CBTs can offer media rich graphics and animation. WBT, however, can get bogged down due to network congestion and must utilize simpler multimedia elements.

Cone et al. (2001) explained that one of the major problems with the current technology-enabled training is that much of it is just repurposed and repackaged classroom training. Many e-learning solutions involve taking instructor and participant guides and placing them online. In order to achieve a successful e-learning solution, however, it is important to follow sound instructional design principles that take into account the content of the material and also the learner characteristics. This is what will be examined next.

Design of Web-based Training

While there are many instructional systems design models, all of them include aspects of analysis, design, development, implementation, and evaluation. Craig (1996) referred to this as the ADDIE model. Driscoll (1998) adapted this model to include the elements of: assessing learners' needs, selecting the most appropriate web-based training method, designing lessons, creating blueprints, and evaluating programs.

Driscoll (1998) explained that before deciding to embark on web-based training, it is important to identify which type of learning is needed as a result of the training. The three identified types are cognitive, psychomotor, or attitudinal skills. Web-based training

is well suited for cognitive skill development and is less suited for training psychomotor or attitudinal skills. Some of the outcomes for cognitive learning might include the learner memorizing terms and concepts, applying rules, distinguishing items, analyzing data, or evaluating and solving problems. Psychomotor goals require the learner to use muscular actions or practice skills. Attitudinal goals expect that the learner will change an attitude or reflect on personal values.

Once the type of web-based training is determined, the design of the program should take into account principles of adult learning. Malcolm Knowles has had a tremendous influence on the theories within the field of andragogy, or adult learning. Knowles (1970) concluded that adults have four needs that should be fulfilled in the learning experience. First of all, there should be an explicit personal benefit to learning something new. Secondly, adults have real-life experiences that should be tapped into. Thirdly, they learn best by hands-on, problem-centered learning. Fourthly, adults want the new learning to be meaningful so that they can apply it immediately to their jobs. Along with these learning attributes, adult learners are continuous learners, prefer to manage their own learning, and have varied learning styles (Driscoll, 1998).

It is also important for web-based instructional designer to take into consideration the conditions that contribute to adult learning. Robert Gagne is considered the leading contributor to the systematic approach to instructional design and training (Kruse, 2000). Gagne (1965) suggested that there are five stages of learning: (1) intellectual skills, (2) cognitive strategies, (3) verbal information, (4) motor skills, and (5) attitudes. Within these various types of learning, there must be nine general instructional events. These events are: (1) gain attention, (2) tell the learners the learning objective, (3) stimulate

recall of prior learning, (4) present the stimulus, (5) provide learning guidance, (6) elicit performance, (7) provide feedback, (8) assess performance, and (9) enhance retention and transfer to other contexts.

Kruse (2000) suggest that in order to gain attention, it would be good to use an animated title screen or to start each lesson with a thought provoking question or interesting fact. To inform the learner of the objectives, the learner should encounter the objectives on the screen to set the expectation of the module. To stimulate recall of prior learning, questions can be asked about previous experiences. When presenting the content, it should be chunked and organized in a meaningful way. A variety of media should also be used to appeal to different learning styles. Learning guidance might take on the form of examples, case studies, graphical images, mnemonics, and analogies. Also, feedback should be given immediately within the context of exercises via formative feedback. To assess mastery of the material, a performance test should be used following the learning module. Finally, to enhance retention and transfer to the job, the training should have a performance focus and utilize a lot of repetition.

Effective web-based design should follow the principles of adult learning and instructional design, and should also follow good principles of developing web content. Smulders (2001) took the principles of good web design and applied them to making web courses. Smulders indicated that the course should give the learner a clear indication of where they are within the course by displaying some sort of visual. It should also take into account the differences in the audience and steer clear of jargon and culture-specific language.

Another important design consideration is to give learners control of the navigation (Smulders, 2001). Navigation bars should not consist of obscure graphics that the learner must scroll over in order to determine where it leads. A consistent look and feel provides a predictable environment for the learner. Color, font sizes, font styles, and tables should be consistent within each element. An example of this would be study tips always being presented in a yellow table. Other considerations are to opt for a simple design, check and re-check the links, and to provide sufficient documentation for the learner in case of errors.

Materi (2001) offers several lessons learned when developing web-based training. First, classroom materials that are going to be utilized on the web should be rewritten to fit the new media. Fonts, graphics, and style all should be easy and clear to read on a web page. Another important point is that graphics and photos can greatly increase learner comprehension. Quizzes, glossaries, web links, list of books, and technical tips all can add more to the learning process and allow the learner to explore and gain more information than if it was arranged in a straight linear progression.

Blended Training

Not all types of learning are best suited for the web because of content considerations and also learner considerations. For complex performance skills courses, such as what was be used in this study, classroom interaction is a better way to teach these skills. Brown (2000) indicated that interpersonal skills are better facilitated through classroom role playing and one-on-one interactions. Lewis and Orton (2000) explained that effective online interventions for soft skills learning are still in its infancy. A hybrid model of learning, one which incorporates online WBT for the cognitive-based

development along with classroom time for the practice exercises, is considered to work best for learning behavioral skills.

Other research concluded that a blended training solution was found to be an ideal approach when the training content involved complex human performance skills, such as interpersonal communication. Holsbrink-Engels (2001) explored the usefulness of using a computer learning environment to deal with social-communicative problems. The researcher piloted the use of a computer-based role-play to help simplify and facilitate learning. The conclusion of the study was that the computer model had the potential to assist in introducing parts of interpersonal skills learning for novices. This learning environment was found to be effective in supplementing existing instructional methods.

A blended approach to training is beginning to find a significant foothold in the field of training and development. Thompson Learning (2002) reported that a “structured curriculum” of blended learning dramatically increases employee productivity over single-delivery options. A study included an examination of 128 employees from a wide range of industries and organizational levels. It compared the effects of traditional learning approaches with a blended learning solution by comparing three groups of employees. Group one received a blended learning course, group two received an online course, and group three was the control group. The results showed a 30 percent increase in performance from the employees when using a blended approach.

In the current study, the three delivery methods of web-based training and traditional classroom instruction were selected because of their relevance to current practices in training and development. The blended approach was specifically selected

because of its increasing popularity and usefulness to provide the most learner-centered training approaches which takes into account individual differences in learners.

Learning Style Theory and Models

This study is designed to examine the relationship between learning style and preferred delivery mode. Learning style has been defined as the set of cognitive, emotional, characteristic and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment (Keefe, 1979). This study used Kolb's learning style model to determine the preferred learning style of the participants. The following section contains a review of literature for the different learning style models and a detailed description of Kolb's Experiential Learning Theory.

Learning Style Models

There are many learning theories and a variety of models used to characterize learning styles. Curry (1983) categorized the research on human learning differences into different layers, using the metaphor of an onion, with its many layers, in order to explain our various learning differences. The innermost layer is the deepest personality traits which shape an individual's orientation towards the world. The next layer, information processing, explains the process by which information is obtained, stored, sorted, and utilized. The third layer, social interaction, describes the way in which social context affects the adoption of certain strategies. Finally, the outer layer is the individual's instructional preference.

Claxton and Murrell (1987) described different models which correspond to the various layers of the learning dimensions. The core layer, personality, had models such as

the Myers-Briggs Type Indicator, Katz and Henry's Omnibus Personality Inventory, and field-dependence and field-independence. The information processing layer included models such as the Pask model, Schmeck Inventory of Learning Process, Kolb's Model, and Gregoric Mind Styles. The third layer, social interaction, included Reichmann and Grasha Learning Styles, Mann's Model, Fuhrmann and Jacob's model, and Eison's model. The outer layer, instructional preference, had the Canfield model and the Hill Model.

In this study, Kolb's Learning Style Inventory was selected to determine the preferred mode of delivery of the participants. This decision was made for several reasons. First, it was designed for an adult population. Second, it was easy to administer and score with a short 12-item inventory. Third, the Experiential Learning Theory, which the LSI is based upon, integrated many of the competing perspectives on learning style and was one of the best-known style theories (Wentling, 2000). Finally, the instrument showed good reliability and validity (Kolb, 1995).

Kolb's Experiential Learning Model

The theoretical framework for this study was primarily based on the Experiential Learning Theory (ELT) (Kolb, 1984). In this theory, learning is "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb 1984, p. 41). ELT is referred to as "experiential" because it emphasizes the part that experience plays in the learning process (Sternberg & Zhang, 2000). It is also known as experiential because it has its roots in the works of John Dewey, Kurt Lewin, and Jean Piage.

John Dewey's Model of Progressive Education

Dewey (1938) made a distinction between “traditional” education and “progressive” education. In the traditional model the subject matter of education has already been worked out and the role of the teacher is to pass on that information to the next generation. It is teacher-driven, rather than learner driven. The progressive model, however, views knowledge as a means to education rather than the end of education. Dewey recognized experience as an important component in the process of learning.

Kurt Lewin’s Experiential Learning Model

Lewin (1951) made a significant contribution to the field of social science and experiential learning with his study of group dynamics. His research found that learning is best facilitated when there is conflict between detached analysis within the individual and immediate concrete experience. A learning environment that had a lot of vitality and creativity was one in which the participants brought their perspectives from their own experiences and the instructor was there to provide the conceptual models. The framework for experiential learning was in his cycle of action, reflection, generalization, and testing (Figure 1).

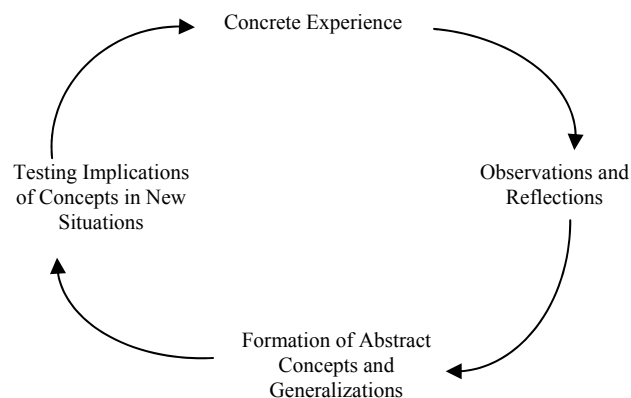


Figure 1. Lewinian Experiential Learning Model

Jean Piaget's Model of Learning and Cognitive Development

Piaget (1970) maintained that learning lies in the interaction of accommodation of concepts and the assimilation of events and experiences into these concepts and schemas. Piaget's four stages of cognitive development (Figure 2) form the basis of the four stages in Kolb's learning cycle (Kolb, 1984). The ideas of assimilation and accommodation in Kolb's concepts of accommodation and assimilation originated from the definition presented by Jean Piaget that intelligence is the process of adapting concepts to fit the external world (accommodation) with the process of fitting these observations into existing concepts (assimilation) (Kolb, 1993).

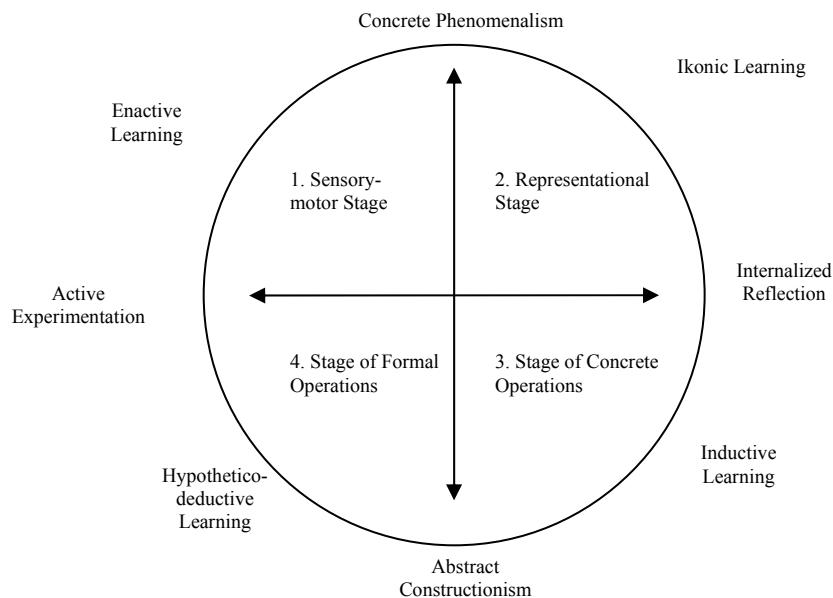


Figure 2. Piaget's Model of Learning and Cognitive Development

Kolb's four-stage learning cycle takes elements of the above theories and places them on a structural grid with four adaptive learning modes—concrete experience, reflective observation, abstract conceptualization, and active experimentation. Transactions among these four modes and the way in which these adaptive dialectics get resolved form the basis for the learning process (Kolb, 1984). These processes are marked on two axes (Figure 3). The vertical axis refers to the intake (grasping) of information either via experience or from abstractions. The horizontal axis represents the processing of information (transforming) either by internal reflection or by jumping in and doing it.

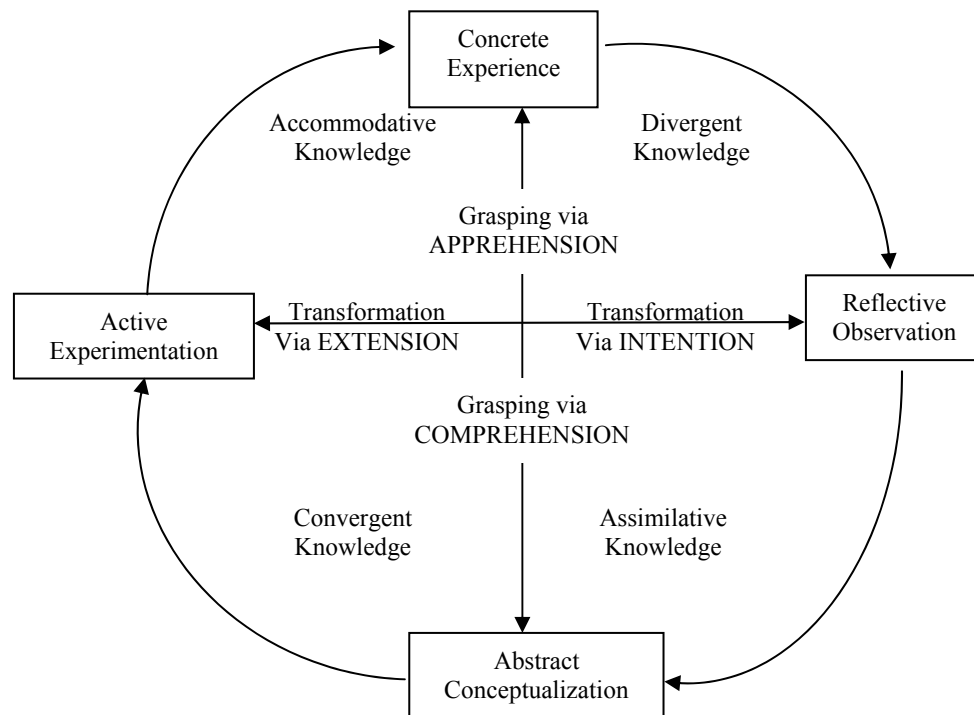


Figure 3. Structural Dimensions of Experiential Learning

Kolb (1984) explained that experience that is brought in through concrete experience and processed through reflective observation is called divergent knowledge. Experience that is brought in through abstract conceptualization and processed through

reflective observation is called assimilative knowledge. Furthermore, experience that is brought in through abstract conceptualization and processed using active experimentation is called convergent knowledge. Finally, experience that is brought in by concrete experience and processed through active experimentation is called accommodative knowledge.

Kolb's Learning Style Inventory

Kolb's Learning Style Inventory is an instrument that can be used to assess an individual's ability to learn experientially (Kolb, 1984). There are two sets of polar opposite qualities: concrete-abstract dimension and active-reflective dimension. The vertical line represents the concrete-abstract dimension of learning and a horizontal line represents the active-reflective dimension of learning (Figure 4). Through various learning experiences, a learner will develop a preference for a particular mode. These modes are categorized as accommodator, diverger, converger, and assimilator.

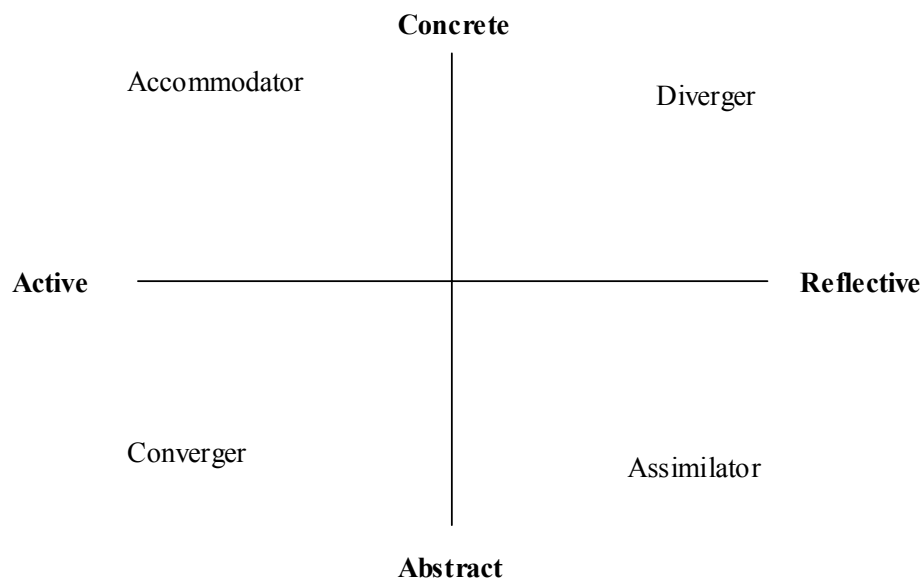


Figure 4. Learning Style Type Grid (Kolb, 1984, p. 42).

Kolb (1984) defined these learning styles the following way:

1. Divergers. The diverger emphasized concrete experience and reflective observation. Their strengths lie in imagination and awareness of meaning. Those oriented toward divergence are interested in people and tend to be imaginative and feeling-oriented.

2. Convergers. Convergers combined abstract conceptualization and active experience. Their strengths lie in problem solving, decision making, and the practical application of theories. They prefer technical tasks over social and interpersonal issues.

3. Accommodators. This group combined concrete experience and active experimentation. They enjoy learning through risk taking and action. They can adapt easily to a changing circumstances, sometimes by disregarding theory.

4. Assimilators. Assimilators relied upon abstract conceptualization and reflective observation. They tended to be more interested in working with abstract concepts than with people. They judged theories by their logicity and precision over their practical value.

Learning Styles and Delivery Mode

The literature on learning styles continue to grow due to the aforementioned need to identify the individual's characteristics that affect the outcome of educational and training initiatives in stead of primarily focusing on the methods themselves. Many studies examined the impact of learning styles on academic achievement and attitudes utilizing different forms of instructional technology. This section explains how learning styles and training activity are related and synthesizes the research concerning matching

learning styles with achievement, attitude, and preference for different instructional technologies.

Training Activities

According to Kolb's experiential learning model, individuals grasp information through either concrete experience or abstract conceptualization and process information through active experimentation or reflective observation (Kolb, 1984). Clark (2001) explained that these different dimensions will impact an individual's preference for different instructional activities that accommodate them. For instance, individuals who prefer concrete experience find theoretical approaches unhelpful but prefer group work and peer feedback. Likewise, individuals who prefer reflective observation enjoy lectures which allow them to take the role of objective observer. They are introverts who want expert instruction. Those who prefer abstract conceptualization are analytical and want learning situations that rely on logical thinking and evaluation. They are more oriented toward symbols and things and less oriented towards people. Individuals who prefer active experimentation do best when they can engage in projects and group discussions. They dislike passive learning situations like lectures. Furthermore, Clark (2001) explained that training approaches should differ based on the individual's learning style which combines the four dimensions discussed above. A summary of the training approaches and learning styles are explained in Table 1.

Assimilators combine abstract conceptualization with reflective observation. The training approach most effective is one which utilizes case studies, theory readings, and thinking alone. Buch and Barkley (2002) described assimilators as "private learners" where group exercises, simulations, and sharing personal feelings about a subject can

hinder the learning. It is expected, based on this information, that assimilators will prefer web-based training as opposed to blended or classroom.

Convergers use abstract conceptualization and active experimentation in their learning process. Clark (2001) explained that the training approach for these individuals should include peer feedback and activities that apply new skills because these individuals are self-directed autonomous learners and prefer to deal with things rather than people. Buch and Barkley (2002) suggested that they are not risk-takers and find classroom participation helpful, but dislike lectures. Based on this, it is likely that convergers will prefer a blended approach to training with both a web-based delivery of information and also in-class exercises.

Accommodators prefer to learn using concrete experience and active experimentation. Clark (2001) suggested that when training these individuals, they would prefer practicing the skill, small group discussions, and involving themselves in new experiences. Buch and Bartley (2002) explained that these individuals prefer role plays, games, and simulations over lectures. They also enjoy group work and sharing their expertise with others. Assimilators would more likely, then, prefer a blended training approach.

Divergers use reflective observation and concrete experience to learn. Clark (2001) suggested using lectures with a lot of time for reflection. They also tend to be interested in people and emotional elements. Buch and Bartley (2002) explained that divergers may feel isolated when working online and that they enjoy idea generating activities such as brainstorming, lectures, and reflective activities. Based on this

information, divergers would be expected to prefer classroom-based delivery over web-based or a blended approach.

Table 1

Learning Style and Mode of Delivery

Learning Style	Preferred Activities	Best-fit Delivery Method
Assimilator	Case Studies, theory readings, thinking alone	Web-based
Converger	Peer feedback, like classroom participation, dislike lectures	Blended
Accommodator	Prefer practice, role plays, small group discussions	Blended
Diverger	Interested in people and feel isolated working alone, enjoy lectures	Classroom

Learning Styles and Instructional Technology

The examination of instructional technology as it relates to learning outcomes has been the focus of much research. Several studies looked specifically at how learning style and the learning environment interact to impact achievement. First of all, Daniel (2000) investigated the effects of learning style and learning environments (synchronous interactive television and asynchronous computer-aided instruction) and student achievement of physical therapy students enrolled in distance education. The results indicated significant main effect and interaction effects between two independent variables. Simple main effect analysis of interaction reported a positive effect for learning

environment (interactive television) at diverger and assimilator learning style types and no effect for converger and accommodator types.

Next, Ester (1992) compared the effectiveness of a computer-assisted instruction and a lecture approach in the teaching of vocal anatomy and function to undergraduate music students with different learning styles. Results revealed a significant interaction between instructional approach and student learning style. Abstract learners demonstrated significantly higher achievement when paired with the lecture approach, while concrete learners performed equally well with lecture and computer-assisted instruction. This study supports the idea in this study that divergers would prefer classroom instruction and convergers would prefer a blended approach.

Van Vuren (1992) investigated the effect of matching learning styles and instruction upon academic achievement of students receiving an interactive learning experience in chemistry. The purpose of the study was to isolate four basic learning styles, design style-specific instruction, and test their effects upon student academic achievement levels in an interactive learning environment. The results of an analysis of variance indicated a significant difference between academic achievement test scores for each of the treatment groups which received a matched tutorial and academic achievement test scores for the control group which received an unmatched tutorial. This study showed that academic achievement gains could be obtained in understanding chemical titration through the use of an interactive learning environment when style-specific instruction was provided.

Parry (2000) researched the effect of perceptual learning style and instructional preference on achievement scores of dental students at a large Midwestern university

enrolled in three delivery methods: classroom, Internet, and computer-assisted modules. The predominant perceptual learning styles that were exhibited were haptic (tactile), interactive, and visual. There appeared to be some relationship between the learning styles and the ability to achieve in different educational settings.

Learning style has also been identified as one of the characteristics which can influence a particular preference for method of delivery (Buch & Bartley, 2002). Much of the literature surrounding preferred mode of delivery and learning styles were found in studies which examined this variable as an adjunct to the main study of achievement outcomes.

Preference for a particular instructional has been associated with learning styles. Buch and Bartley (2002) did an exploratory study which investigated the relationship between learning style and preference for training delivery mode. It was expected that learning style would influence learners' preference for receiving training through classroom, computer, TV, print, or audio-based delivery modes. A total of 165 employees from a large US financial institution completed the Kolb Learning Style Instrument and a survey measuring training delivery mode preference. Results found support for the expected relationship between the two, with convergers showing a stronger preference for computer-based delivery and assimilators showing a stronger preference for print-based delivery. However, results also revealed an overall preference for classroom-based delivery for adults in the study, regardless of their learning style.

Percey (1997) studied the relationship between learning style and students' preference for computer-based training. Sixty seven members of the Canadian Forces Naval community were administered the Myers-Briggs Type Indicator (MBTI) as well as

Kolb's Learning Style Inventory. They then took a training course via CBT and were administered an attitude questionnaire about their preference for the CBT training. There was no support found for a relationship between learning style and CBT preference, but on the MBTI, sensing and judging types were found to more likely prefer CBT while intuitives and perceivers were less likely to prefer CBT. This study is significant because Kolb's Experiential Learning Theory has some correlation to the MBTI. Because intuitives are related to assimilators (Kolb, 1984), it would appear that they would seem that they would prefer CBT, but this result could be because of their preference for reflective observation instead of active experimentation.

Another study utilizing the MBTI corroborated the above study with judging personalities preferring web-based instruction. Alexander (2000) compared the two modes of web-based and traditional instruction in a one credit hour course at Western Kentucky University. A quantitative survey and test scores were collected and compared to the Myers-Briggs Type Indicator personality inventory. While no significant differences were found between the achievement variables, there was a significant difference found among the judging type personalities in that they preferred the web-based instruction over the traditional instruction. Judging personality types correlate with the converger learning style. Convergents appear to prefer a blended approach which includes web-based training.

Dolan (1999) studied a group of representatives from nine companies in New Brunswick to examine the training delivery methods and employee preferences for different training programs. Employees taking part in this study expressed a preference for programs that combine several different delivery methods, that accommodate

different learning styles, that provide opportunities for networking and interaction, and that offer the learners choices in what, how, where, and when they learn.

Wright (1999) compared the perceived satisfaction of students taking both synchronous and asynchronous courses at the graduate level at The University of Alabama. Both groups took both a pre- and post-test, along with a technology learning style inventory and instructional style preference survey. On the satisfaction variable of whether they felt the course was a valuable learning experience, a significant difference was found in favor of the asynchronous group. Instructional style seemed to be the main contributor to this variance.

Several studies indicated no statistically significant difference between learning style and the instructional technology employed. Knisbacher (1999) investigated the relationship between learning style, thinking style, and three dependent variables: instructional presentation preference, preferred instructional delivery platform, and occupational choice. The sample of 100 participants came from a large government agency in Washington, D. C. The findings of this study showed that relationships exist between learning and thinking styles and between instructional presentation preference and occupational choice. No relationship was discovered between learning/thinking styles and instructional delivery platform preference.

Bertrand-Hines (2000) explored the possible relationship between the learning styles of students at a distance and their preferred instructional technology. Students enrolled in three distance education programs at the University of New Mexico were asked to participate in the study. The Kolb Learning Style Inventory was used to identify the learning style of each participant. The statistical analysis showed no significant

relationship, though a possible trend was identified among the learning styles of Convergers and Divergers. The post-hoc analysis revealed other possible relationships among the three media attributes, visual, tactile, and didactic. More convergers preferred tactile attributes and divergers and assimilators were less likely to prefer a tactile approach. This concurs with the literature because convergers are active experimenters and divergers and assimilators are reflective observers.

Additionally, Harp, Taylor, and Stazinger (1998) examined individual preferences for three software training methods: computer-based training, video tutorials, and instructor-led classroom training. A sample of 263 users of a software training program were interviewed via the telephone and asked about the usefulness of the training methods. Overall, video instruction was preferred the least, followed by CBT. Instructor-led training was preferred the most, although there wasn't a statistically significant difference between CBT and instructor-led preference.

Finally, Doherty (2000) investigated learning styles and students' perceptions of the helpfulness of Internet-based methods of instruction among students enrolled in Internet-based courses at the four Nevada community colleges. The study utilized Solomon and Felder's Index of Learning Styles to determine the students' learning styles. A chi-square test revealed that more "reflective" learners were enrolled in the Internet-based course than the regular course. Also, an analysis of students' helpfulness ratings for thirteen specific methods of instruction indicated students found Internet-based instruction to be helpful in learning course material. E-mail and a detailed course schedule were perceived as the most helpful elements of a course.

Summary

All the indications point to the fact that the many different forms of technology-enabled learning are here to stay and they will likely increase in importance in organizations. One particular form of this is a hybrid instructional model called blended learning which includes aspects of online learning along with the peer-to-peer and instructor interaction of classroom learning. The literature showed that there were many studies which examined learning style as it related to distance education achievement outcomes within higher education settings. Several studies indicated a need for further study of the individual factors which contributed to the differences between distance education environments.

Of the studies which examined learning style and delivery mode preference, it was usually done as subtopic within a larger study of comparing achievement scores between two modes of delivery. Within these findings, there were mixed conclusions on the relationship between these variables. Some utilized personality-type learning style instruments while others utilized information-processing theory instruments. Conclusions which supported learning style association with preferred delivery modes dealt with variables such as specific instructional technologies within instruction rather than the entire delivery mode. This study, therefore, is important because of the lack of research surrounding learning style and preferred mode of delivery within a corporate setting utilizing the emerging method of blended learning.

CHAPTER 3

METHODS AND PROCEDURES

Introduction

The purpose of this study is to investigate the relationship between preferred learning style and preference for training delivery mode. The research hypothesis is: Adult learners' preferred mode of delivery is dependent on their preferred learning style. This section describes the methods and procedures used in this study. It begins with a description of the subjects in this study, including the population and sample. Next, the research design is explained. Thirdly, the instruments and treatment used in this study are described. Following this, the data collection procedures, data analysis, and the statistical analysis are explained.

Population

The population for this study was the customer support representatives working in the Dallas Customer Service Operations Department of NTT/VERIO, a multinational Internet company. The population is made up of individuals who field inbound calls for billing support and technical support. The total number of people working in these departments was 72.

Sample

Because the required number in a sample ($n=60$) would be a high percentage of the population ($N=72$) the researcher decided to not randomly sample the population. Instead, the entire population was used in this study. Individuals from this population

were randomly assigned to one of six groups with each group consisting of 12 individuals. Documents concerning permission to conduct this study are in Appendix A.

Research Design

This study involved an examination of the association between learning style and preferred mode of delivery. There were two independent variables, learning style and mode of delivery. The dependent variable was the preferred mode of delivery of the participants obtained through a self-report survey. The independent variable learning style had four levels: accommodator, assimilator, diverger, and converger. The independent variable mode of delivery had three levels: web-based, blended, and traditional. It utilized a 4x3 matrix with nominal categorical variables. A chi-square (χ^2) statistic was calculated to test the null hypothesis that learning style and preferred mode of delivery were independent of each other.

One potential source for internal invalidity is serial dependency. This occurs when the observed behavior is dependent on the behavior that occurred in a previous session (Gall, Borg, & Gall, 1996). In this study that would mean that the preference for one delivery method over another might be dependent on the order in which they were delivered. To control for serial dependency in this study, the population was randomly assigned to one of three groups. The groups were then administered the treatment in varying delivery mode orders.

In order to help control for experimental mortality (participants dropping out of the study), it was determined to deliver all three modules during an allotted time in one training room. This also ensured that all participants had the opportunity to be exposed to all delivery methods in the predetermined random order.

Another potential source for invalidity that was controlled for in this study was the problem of how the content may influence the preference for one delivery mode over another. In order to control for this, the study utilized three modules that all dealt with the content of the course used in this study. The homogeneity of content between the modules made content factors unlikely in this study.

Instrumentation

Three instruments were used in this study. A Learner Background instrument was used to collect the demographics of the sample and the participants' expected preferred mode of delivery. Kolb's LSI (1985) was used to assess learning style and a researcher-developed Preferred Mode of Delivery survey instrument was used to assess the participants' preferred mode of delivery following the treatment.

Learner Background Instrument

The first instrument in this study was a researcher-developed Learner Background instrument (Appendix D). This instrument included items of gender, age, level of education, and reference number assignment assigned by the researcher. It also explained the three types of delivery methods used in this study and asked the participant to indicate, from a strictly learning standpoint, which they think might be their preferred mode of delivery. They were asked to select one based on the standpoint of learning as opposed to other factors such as convenience.

Kolb's Learning Style Inventory

The second instrument used in this study was Kolb's Learning Style Inventory (LSI) purchased from the Hay Group. This instrument is based on Kolb's experiential

learning theory and is used to measure a learner's preference for assimilating new information.

The LSI consists of 12 sentence completion items, each having a choice of four endings. Respondents are asked to rank each of the four sentence endings in a way that best describes their learning style. Each of the endings corresponds to one of the four stages of Kolb's experiential learning model: Concrete Experience (CE), Abstract Conceptualization (AC), Reflective Observation (RO), and Active Experimentation (AE). The resulting four scores yield raw scores ranging from 12 to 48. This measures the emphasis that the learners place on each of the four stages of the learning cycle.

These scores are used to generate two mean scores for learning dimensions. The scores range from +36 to -36 and are plotted on the learning style type grid. The horizontal line represents the polar opposites of active experimentation and reflective observation. The vertical line represents the opposites of abstract conceptualization and concrete experience. The horizontal point is produced by subtracting the AE score from the RO score. The vertical plot is produced by subtracting the CE score from the AC score. Two intersecting lines are drawn to determine the respondent's learning style quadrant. The result is that the participants will fall into one of the four learning style quadrants: Assimilator, Accommodator, Converger, or Diverger.

The technical specifications of the LSI explained that the four basic scales and the two combination scores show very good internal reliability as measured by Cronbach's standardized alpha and Tukey's Additivity Power Test (Kolb, 1995). Cronbach's alpha ranged from .73 to .88 and the Tukey's Additivity Power Test indicates almost perfect additivity (1.0). Validity studies have found the LSI to relate to several variables such as

personality and learning outcomes. Kolb (1984) found a correlation between the LSI and the Myers-Briggs Type Indicator. RO is positively correlated with introversion (.34, $p < .01$) and intuition is negatively correlated with CE (.25, $p < .01$). Because experiential learning theory is based on Jung's theory of psychological types, these correlations are expected.

Preferred Mode of Delivery Survey

The third instrument utilized in this study was a researcher-developed Preferred Mode of Delivery survey (Appendix E). This instrument asked the participant to place a check next to the delivery method which they preferred the most. It also thanked them for participating in the study. Like the Learner Background survey, the respondents were asked to make their determination from the standpoint of learning, instead of other factors such as convenience.

Treatment

The course content came from a SmartForce e-learning course called "Influencing Others Positively" (Appendix D). NTT/VERIO has a site license for dozens of courses including the selected course for this study. According to SmartForce (2002), the description of the course is:

"The learning path presents influence as an umbrella under which manipulation (negative form) and persuasion (positive form) exist. It examines the connection between people's relationships and their ability to positively influence others. It demonstrates the verbal and non-verbal clues that need to be assessed. A number of advanced techniques are also discussed" (Description section, para. 1).

There are no stated prerequisites to the course. The audience is “anyone seeking personal and professional development to enhance their performance and contribution in the workplace by acquiring influencing expertise” (Audience section, para. 1). It is part of the leadership training modules under interpersonal skills development.

SmartForce (2002) utilized a four-pronged approach to developing their e-learning courses. The following are descriptions of these four approaches:

1. Instruction. “The instruction mode discusses theories and demonstrates tasks, with a focus on the learner. These e-Learning objects consist of structured events and serve as the foundation for building more advanced knowledge” (Instructional Design Framework section, para. 4).
2. Practice. “In the practice mode, learners can safely apply newly acquired skills and knowledge in a simulated environment. Learners apply their knowledge to real-world, hands-on job tasks” (Instructional Design Framework section, para. 5).
3. Collaboration. “In the collaboration mode, learners are encouraged to communicate with experts and their peers. Collaboration allows learners to share and reinforce what they have learned, much as they have done in classroom and workshop environments since education began. Online mentoring allows learners to have access to subject-matter experts around the clock” (Instructional Design Framework section, para. 6).
4. Assessment. “In the assessment mode, the learners take tests to evaluate the depth of their knowledge and determine the content needed to address identified knowledge gaps. Assessment confirms whether an individual’s learning experience has fulfilled its objectives” (Instructional Design Framework section, para. 7).

The course “Influencing Others Positively” contained several modules: (1) Influencing, (2) Relationships and influencing, (3) Non-verbal techniques, (3) Verbal techniques, and (4) Advanced influencing techniques (Appendix F). The first module called “Influencing” was delivered via self-paced, web-based online content. This module included graphics, photographs, and audio instruction and feedback. Participants were asked to respond to series of questions during the module and feedback was given according to the information typed in by the participant.

The second module called “Non-Verbal Techniques” was delivered via a blended approach. Participants completed the module the same way as the web-based delivery, but the course was supplemented with a group activity about non-verbal clues. The activity came from an optional facilitator’s guide that came with the e-learning course (Appendix G).

The last module, “Verbal Techniques” was delivered via traditional classroom instruction. Participants received lecture and also interactive exercises on tone and language. The material utilized also came from an optional student manual and facilitator’s guide that was included in the e-learning course.

Data Collection Procedures

Employees working in the billing and technical support areas were randomly assigned to one of six groups. Each group received three modules delivered in one of three different orders. The following outline describes the order of the delivery methods:

1. Groups one and two received delivery in the following order: (1) web-based, (2) blended, and (3) classroom.

2. Groups three and four received delivery in the following order: (1) blended, (2) classroom, and (3) web-based.
3. Groups five and six received delivery in the following order: (1) classroom, (2) web-based, and (3) blended.

Each group was relieved from their normal work duties to attend this special training class in one of the training rooms located at their place of employment. After students arrived for the study, the first step in the classroom was to introduce the purpose of them being there. The participants were then asked to introduce themselves and tell what position they hold in the company. Secondly, the background survey instrument was administered to the participants. Each instrument had a unique number in the upper right-hand corner which corresponded with the number on the learning style inventory and the preferred mode of delivery survey.

Upon completion of the background survey, the third step in the procedure was to administer the Kolb Learning Style Inventory. Instructions were verbally communicated to the participants. Upon completion of the inventory, they self-scored their test according to the directions provided. A brief overview of learning styles was given and they were told they could keep a copy of the profile sheet that was given to them so that they could read further about their preferred learning style.

The fourth step was to deliver the modules of the course “Influencing Others Positively” according to the sequence that was assigned to their group. All three modules were delivered in the classroom during the time allotted with a 10 minute break given in between each module.

The last step in the data collection of this study was to administer the preferred mode of delivery survey. Upon completion, the survey was collected and the participants were thanked for their involvement in the study.

Data Analysis Procedures

The null hypothesis, adult learners' preferred mode of delivery is independent of their preferred learning style, was tested using chi-square (χ^2) test for independence. Gliner (2000) explained that the chi-square test for independence is appropriate when the analysis is to test the association between two categorical variables. The requirements for chi-square test of independence are that there is one categorical independent variable with at least two levels and one categorical dependent variable, and that each participant occupies only one group. A pre-determined alpha level of .05 was used for the test of significance. The researcher used SPSS statistical software to analyze the data. The following guidelines were used:

1. Describe the sample and demographic statistics.
2. Report the descriptive statistics of LSI of four learning modes and two learning dimensions and learning style type of the entire sample.
3. Plot the mean scores of learning dimension scales (AC-CE and AE-RO) by delivery mode and learning styles for visual analysis.
4. Perform a chi-square test of independence between the Learner Background expected preferred mode of delivery (pre-treatment survey) and the actual preferred mode of delivery (post-treatment survey).
5. Perform a chi-square analysis on the variables learning style and preferred mode of delivery to test the null hypothesis.

6. If the difference between the observed frequencies and the expected frequencies is statistically significant, then a post hoc analysis of the standardized residuals would be performed to determine which categories were the major contributors to the significant association.

Summary

This purpose of this study was to investigate the association between learning style and preferred mode of delivery. The study utilized adult learners from a large technology company in Dallas, Texas. The entire population of billing and technical support representatives was used, rather than a sample, because the sample would be so large it would essentially be the population.

Participants were randomly assigned to one of six different groups and received training via three different modes of delivery: web-based, classroom, and blended training. Instruments used were a researcher-developed Learner Background survey, Kolb's Learning Style Inventory, and a researcher-developed Preferred Mode of Delivery survey.

Data was analyzed using chi-square test for independence to test the null hypothesis that learning style is independent of preferred mode of delivery. Standardized residuals were calculated following a significant chi-square value to see which categories were the major contributors.

CHAPTER 4

FINDINGS

In this study, the association between learning style and preferred mode of delivery was examined. The hypothesis was: adult learners' preferred mode of delivery is dependent on their preferred learning style. This section is divided into three parts. First, a description of the data is presented including demographic data, followed by the frequencies for expected and actual preferred mode of delivery. Other descriptions include the four learning stage mean scores (CE, RO, AC, AE), learning dimension mean scores (AC-CE, AE-RO), and preferred learning style of the sample as depicted by Kolb's Learning Style Inventory (LSI-IIA). In the second section, the statistical analysis of the results is presented. The last section contains the null hypothesis along with analysis and discussion.

The population was 72 technical and billing customer support employees at NTT/VERIO in Dallas, Texas. Because of the high number of subjects needed for a sample, the researcher decided to use the entire population in this study. Sixty-three of these individuals began the class and 2 people left before the study was concluded. Therefore, a total of 61 subjects were included in this data analysis. The individuals were randomly assigned to one of six sections. Each section consisted of three modules from the SmartForce e-learning course called "Influencing Others Positively". The three modules were delivered in three methods: web-based, classroom, and blended training. During the web-based portions of the course, the participants worked independently at

their computer workstation using headphones to listen to the course. For the classroom portion, the lesson consisted of lecture, discussion, and small group exercises, without using computers. The module delivered by blended training began with the participants working independently at their computer station for the web-based part. The classroom part consisted of small group exercises to reinforce the concepts in the web-based module.

Description of Data

Demographic Information

Nearly two-thirds of the participants were male. A summary of the gender data is presented in Table 2.

Table 2

Gender Data

Label	Total	%
Male	39	63.9
Female	22	36.1

Over eighty percent of the participants have had at least some college experience. A summary of the educational level data is presented in Table 3.

Table 3

Educational Level

Label	Total	%
High School	10	16.4
Some College	28	45.9
College Graduate	23	37.7

The median age of this group was 31. A summary of the age characteristics is presented in Table 4.

Table 4

Age of Population

	Total
Mean	32.66
Minimum	21
Maximum	60

Expected and Actual Preferred Mode of Delivery

All of the participants were informed of the differences of each of the delivery methods and were asked, via a survey, which method they expected that they would prefer. Nearly 69 percent indicated they would prefer a blended approach to training. The frequencies of expected preferred mode of delivery collected from the Learner Background survey are presented in Table 5.

Table 5

Expected Preferred Mode of Delivery

Mode of Delivery	Total	%
Web-based	7	11.5
Classroom	12	19.7
Blended	42	68.9

The expected preferred mode of delivery and the actual preferred mode of delivery were nearly identical in this study. The frequencies for actual preferred mode of delivery are presented in Table 6.

Table 6

Actual Preferred Mode of Delivery

Mode of Delivery	Total	%
Web-based	6	9.8
Classroom	14	23.0
Blended	41	67.2

The preference for second choice mode of delivery was about equal for both web-based and classroom training. The frequencies for second choice preference for delivery method are presented in Table 7.

Table 7

Second Choice Mode of Delivery

Mode of Delivery	Total	%
Web-based	24	39.3
Classroom	23	37.7
Blended	14	23.0

The preference for third choice mode of delivery was clearly web-based training. The frequencies for third choice preference for delivery method are presented in Table 8.

Table 8

Third Choice Mode of Delivery

Mode of Delivery	Total	%
Web-based	31	50.8
Classroom	24	39.3
Blended	6	9.8

Learning Style Types

The participants took Kolb's Learning Style Inventory. This inventory generated six numbers: four learning stage mean scores and two learning dimension mean scores. The learning stages were concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE). A summary of the learning stage mean scores for the sample is provided in Table 9.

Two learning dimension scores (AC-CE and AE-RO) were calculated from the four learning stage mean scores. The learning dimension mean scores for the sample are presented in Table 10.

Table 9

Learning Stage Mean Scores by Preferred Mode of Delivery

Preferred mode of delivery	N	CE		RO		AC		AE	
		M	SD	M	SD	M	SD	M	SD
WBT	6	20.67	4.97	33.83	5.71	34.00	6.16	31.50	4.23
CT	14	24.86	5.59	27.71	6.53	33.50	5.45	33.93	5.24
BT	41	25.24	6.41	35.34	31.84	30.22	7.08	34.20	6.01

Table 10

Learning Dimension Mean Score

Preferred mode of delivery	N	AC-CE		AE-RO	
		M	SD	M	SD
WBT	6	13.33	9.48	-2.33	8.09
CT	14	8.64	9.09	6.21	10.05
BT	41	4.98	11.38	-1.15	32.50

Figure 5 represents the average learning dimension scores of the individuals who preferred the three types of delivery methods. Those who preferred blended training and web-based training had average learning dimension scores which placed them in the quadrant of assimilator. Assimilators' preferred mode of learning is through concrete

experience and reflective observation. Those who preferred classroom training had average learning dimension scores that would place them in the Converger quadrant. Convergers' preferred method of learning consists of concrete experience and active experimentation.

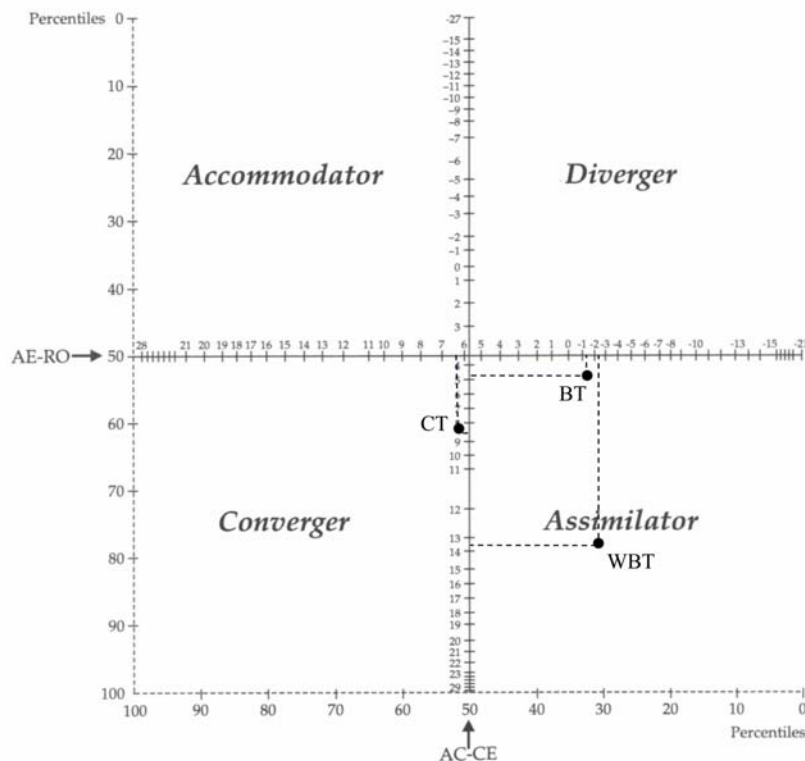


Figure 5. Plot of learning dimension scores of participants preferring WBT, BT, and CT.

The learning dimension scores were plotted on the learning style type grid to determine preferred learning style types of the participants. The preferred learning style of the population is presented in Table 11. Just under half of the participants have Assimilator as their preferred learning style. Divergers were the fewest in number with approximately fifteen percent of the participants preferring this learning style.

Table 11

Learning Style Types of Customer Support Representatives

Learning Style	N	%
Accommodator	11	18
Diverger	9	14.8
Converger	14	23
Assimilator	27	44.3

The learning dimension mean scores of the Converger in the preferred modes of delivery of web-based, blended, and classroom training are plotted in Figure 6.

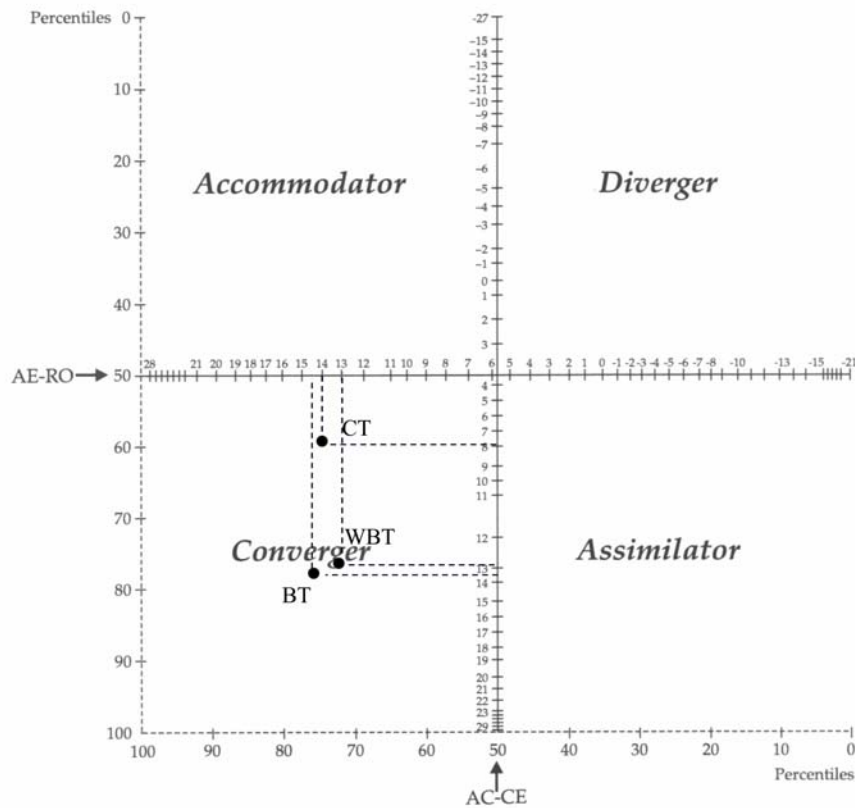


Figure 6. Plot of learning dimension scores of Convergers in WBT, BT, and CT.

The learning dimension mean scores of the Assimilator in the preferred modes of delivery of web-based, blended, and classroom training are plotted in Figure 7.

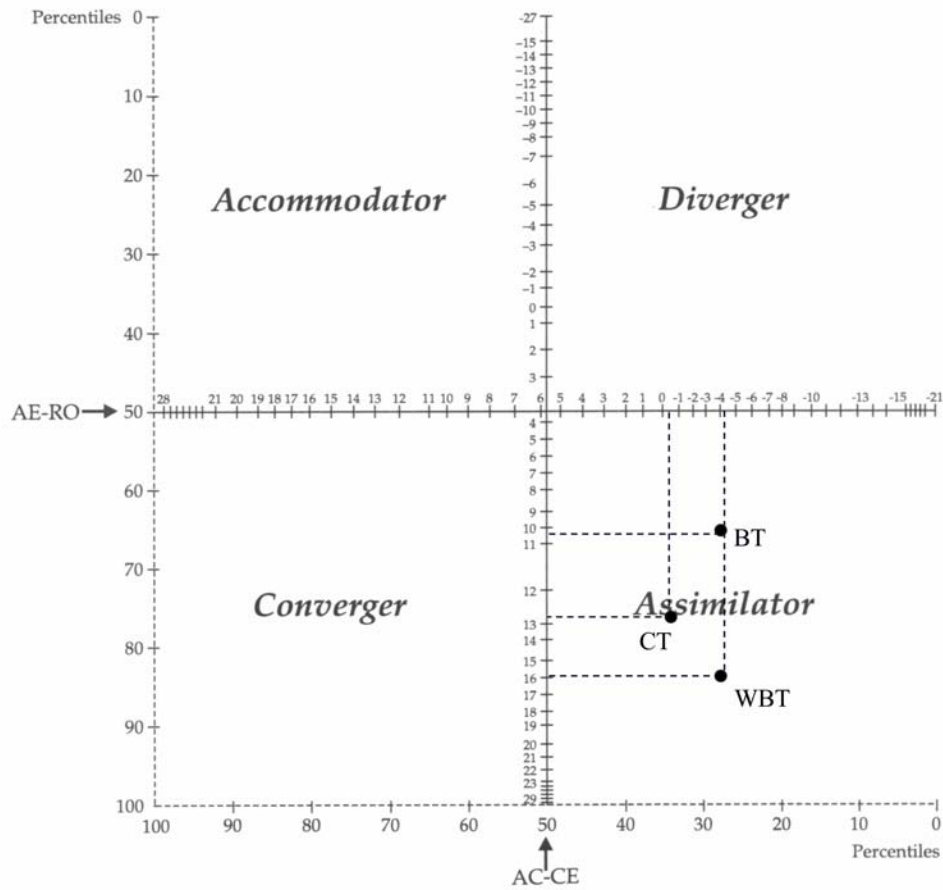


Figure 7. Plot of learning dimension scores of Assimilators in WBT, BT, and CT.

The learning dimension mean scores of the Accommodators in the preferred modes of delivery of web-based, blended, and classroom training were plotted in Figure 8. There were no individuals with an Accommodator learning style who preferred web-based training; therefore, there is no WBT plotted in Figure 8.

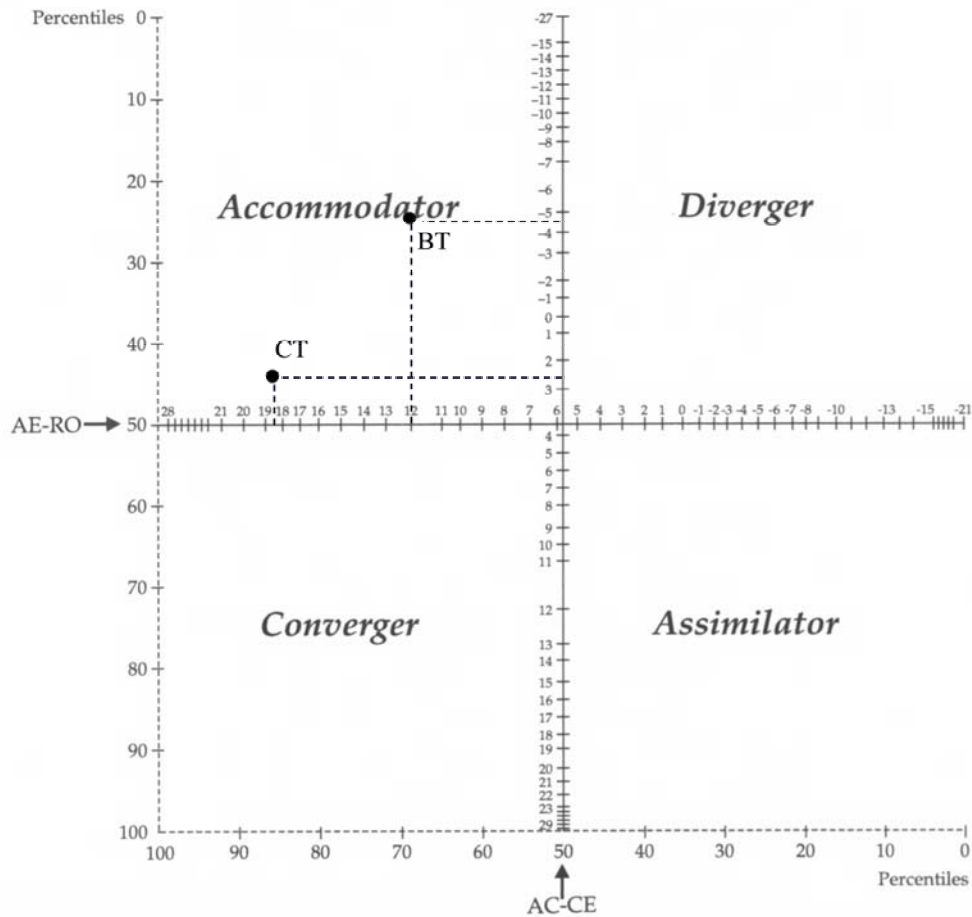


Figure 8. Plot of learning dimension scores of Accommodators in WBT, BT, and CT.

The learning dimension mean scores of the Divergers in the preferred modes of delivery of web-based, blended, and classroom training are plotted in Figure 9. No individuals with the learning style of Diverger preferred classroom training; therefore, CT is not plotted in Figure 9.

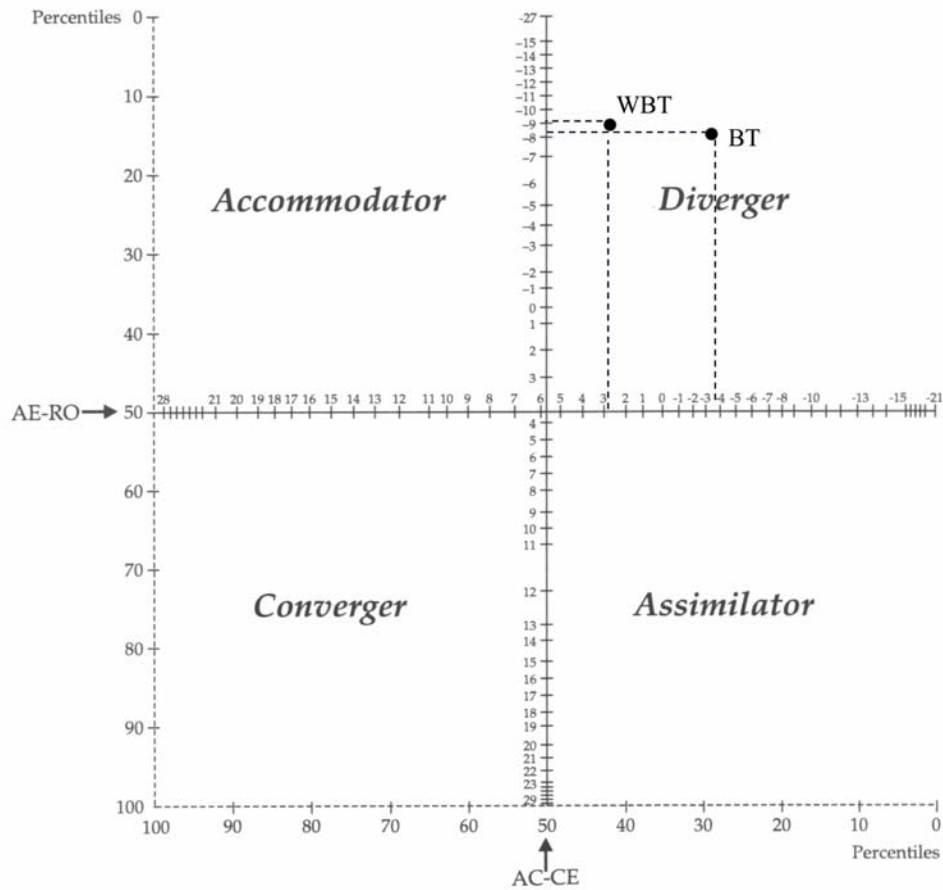


Figure 9. Plot of learning dimension scores of Divergers in WBT, BT, and CT.

Statistical Analysis

The researcher conducted a chi-square test of independence comparing expected preferred mode of delivery and actual preferred mode of delivery. A contingency table for expected preferred mode of delivery and actual preferred mode of delivery is presented in Table 12.

Table 12

Chi-square Contingency Table: Expected and Actual PreferredMode of Delivery

Expected Preferred Mode of Delivery		Actual Preferred Mode of Delivery		
		WBT	CT	BT
WBT	Actual	3	0	4
	Expected	.7	1.6	4.7
	Standardized Residuals	2.8	-1.3	-0.3
CT	Actual	0	9	3
	Expected	1.2	2.8	8.1
	Standardized Residuals	-1.1	3.8	-1.8
BT	Actual	3	5	34
	Expected	4.1	9.6	28.2
	Standardized Residuals	-0.6	-1.5	1.1

The chi-square test of independence (Table 13) showed a significant relationship between the expected preferred mode of delivery and the actual preferred mode of delivery $\chi^2(4, N=61)=31.72, p<.05$. This means that what the participants indicated they expected to prefer was very closely associated with what they actually preferred after receiving instruction in all three methods.

Table 13

Chi-square Test of Independence between Expected and ActualPreferred Mode of Delivery

	Value	df	Sig.
Pearson Chi-square	31.72	4	.000

The researcher also conducted a chi-square test of independence comparing all learning styles and preferred mode of delivery. A contingency table for learning style and preferred mode of delivery is presented in Table 14.

Table 14

Chi-square Contingency Table: Learning Style and Preferred Mode of Delivery

Learning Style		Mode of Delivery		
		WBT	CT	BT
Accommodator	Actual %	0.0	36.4	63.6
	Standardized Residuals	-1.0	0.9	-0.1
Diverger	Actual %	11.1	0.0	88.9
	Standardized Residuals	0.1	-1.4	0.8
Converger	Actual %	7.1	14.3	78.6
	Standardized Residuals	-0.3	-0.7	0.5
Assimilator	Actual %	14.8	29.6	55.6
	Standardized Residuals	0.8	0.7	-0.7
Expected Total %		9.8	23	67.2

Hypothesis Testing

Based on the results of this statistical analysis, the hypothesis stated in chapter 3 was tested. The hypothesis was to test to see if there was a relationship between adult learners' preferred learning style and their preference for training delivery method.

Null Hypothesis 1

H₀₁: Adult learners' preferred learning style is independent of their preferred mode of delivery.

Based on the data collected and analyzed in Table 15, there was no statistically significant relationship found between learning style and preferred mode of delivery, $\chi^2(6, N=61)=7.26, p>.05$. Therefore, H₀₁ is retained. This suggests that, in this study, learning style and preferred mode of delivery are independent of each other and are not statistically significantly associated.

Table 15

Chi-square Test of Independence between Learning Style and Preferred Mode of Delivery

	Value	df	Sig.
Pearson Chi-square	7.256	6	.298

Since a significant chi-square value was not found, a post-hoc analysis of the standardized residuals is not warranted. However, since chi-square utilizes frequencies, it is important to examine the rows and columns' observed frequencies to see if there are any levels which are of particular interest due to their deviance from the expected

percentages. Table 14 indicated that the expected percentages for preferred mode of delivery would be 9.8 percent for WBT, 23 percent for BT, and 67.2 percent for CT. On the Accommodator row, it is of interest to note that WBT had zero percent, which is less than the expected 9.8 percent and that CT had 36.4 percent which is quite a bit more than the expected 23 percent. On the Diverger row, it is of interest to note that CT had zero percent, which is markedly less than the expected 23 percent and BT had 88.9 percent which is more than the expected 67.2 percent. On the Converger row, it is interesting to note that CT had fewer than expected and BT had more than expected. Furthermore, on the Assimilator row, both WBT and CT had more than expected and BT had fewer than expected. Even though these results are not statistically significant, it is noteworthy that Divergers had no preference for classroom training and that the vast majority of.

In addition, because so many preferred a blended approach to training, a logistic regression analysis was run to see if there was an association between learning style and those who preferred blended training or other training (WBT and CT). The constant variable selected was Divergers. Table 16 shows that Assimilators were over six times more likely than Divergers to choose blended training. This was statistically significant at the $p=.10$ level of significance.

Table 16

Summary of Logistic Regression

Style	P-value	Exp(B)
Accommodator	.22	4.56
Converger	.53	2.18
Assimilator	.10	6.38
Constant (Diverger)	.38	.13

Summary

Seventy-two subjects were randomly assigned to one of six sections and 61 were eventually used in the analysis. The hypothesis in this study was analyzed using chi-square test of independence. Table 17 provides a summary of the results in this study.

Table 17

Summary of Hypothesis Testing

Hypothesis	P-value	Decision
H ₀₁ : Adult learners' preferred mode of delivery is independent of their preferred learning style.	.298	Retained

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Technology enhanced e-learning strategies continue to take root in the field of training and development. The literature reveals that the utilization of technology doesn't denigrate the outcome of instruction (Russell, 1999). However, individual differences are a significant factor in determining the acceptance of various delivery methods.

Instructional designers want to make the most effective training intervention by utilizing the most effective delivery method. One potential way to make a training intervention effective is to match learning styles with preferred mode of delivery.

The purpose of this study was to investigate the relationship between preferred learning style and preferred mode of delivery for adult learners. The hypothesis for this study was that learning style is dependent on preferred mode of instruction. Limitations of this study included: 1) a small sample size, 2) a non-random selection of a sample from a larger population, and 3) a research design that demonstrates a relationship but cannot infer cause and effect.

Conclusions

The conclusions derived from this study must take into account the limitations placed by the design of the experiment. Generalizations and inferences must take into account the conditions unique to this investigation.

The null hypothesis that adult learners' preferred mode of delivery is independent of their preferred learning style was retained. In this study, there was no statistically

significant relationship found between preferred learning style and preferred mode of delivery. However, even in the absence of statistical significance, several observations can be made from trends in the data.

Research has shown that training on complex human performance skills, such as what was used in this study, is best facilitated with portions of it being classroom-based. Approximately 67 percent of the subjects in this study preferred the blended approach which included exercises developed to reinforce the concepts learned from the WBT module. This high percentage preferring blended training is consistent with the research concerning soft skills training.

Another interesting trend was that no individual who had the Diverger learning style preferred the classroom training, which was different from what was expected based on the literature review. In fact, they preferred the blended approach more than any other. This is consistent with the literature that individuals with this learning style are interested in people, enjoy lectures, and feel isolated working alone. It is possible that they did not feel isolated working alone due to the fact that they were in the same classroom surrounded by peers as they took the web-based portion of the course.

None of the Accommodators in this study preferred web-based training. This is consistent with the literature that they prefer practice, role plays, and small group discussions. Because they had a higher than expected preference for blended training, this would appear to support the idea that they would prefer a blended approach to training.

Assimilators prefer case studies, theory readings, and thinking alone. The results of this study showed that nearly 45 percent of the subjects preferred this learning style. Research has shown that Assimilators might prefer careers which include research and

finance (Kolb, 1993). The job responsibilities of the individuals in this study include researching and billing support. It was also anticipated that Assimilators would also prefer web-based training over the other methods. The results indicated that they had a lower than expected preference for classroom training and a higher than expected preference for web-based and blended training. Although not statistically significant, it is noteworthy that this was a trend with Assimilators.

Recommendations

Based on the results of this study, several recommendations are suggested for future research in the areas of learning style and delivery methods.

1. This study was limited to the Kolb Learning Style Inventory based on an information processing theory of learning styles. More studies should utilize other theories of learning styles and preferred mode of delivery based on other instruments such as the Canfield model.
2. Other studies should include different types of learning outcomes, such as psychomotor, in order to assess the preferences based on different learning outcomes.
3. Further studies should examine achievement outcomes based on learning style and the three delivery methods of web-based, classroom, and blended training.
4. Other studies should include longer sessions, possibly having the participants take the entire course via web-based, blended, and classroom, instead of just one module. Having subjects complete the web-based portions outside of the classroom environment might impact their preference for that delivery method.
5. Given the increase in other types of learning technologies within the field of training and development, studies of learning style and preferred mode of delivery should

- include other, more progressive, delivery methods such as mobile learning and Electronic Performance Support Systems.
6. Future research should include a larger sample of adult learners from several different organizations at varying levels of deployment of web-based learning. The data could include a rating of the level of technology acceptance within the company in order to compare that to the preferred mode of delivery.
 7. Training organizations should consider utilizing a learning style assessment in the needs assessment phase of designing instructional interventions in order to help determine the best method of delivery.

Summary

Technology-enabled training will continue to increase its presence in the future as companies look for ways to effectively deliver training and development initiatives to a workforce that is made up of a diverse set of individuals who have individual needs. Blended training is of growing interest because it is not limited to either purely web-based or classroom delivery, but combines the best aspects of many methods in order to achieve the best results from the learners. Because of its ability to reach an audience with multiple delivery methods, it is very advantageous to use in order to accommodate the various learning styles found within each classroom of participants. Individuals who are involved with corporate training and development should consider many different aspects of the learner, including learning style, when trying to determine the best method for delivering training interventions.

APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY^{of} NORTH TEXAS

Office of Research Services

April 16, 2002

David McFeely
1500 Chukka Dr., #906
Arlington, TX 76012

RE: Human Subjects Application No. 02-113

Dear Mr. McFeely,

Your proposal titled "Learning Style and Preferred Mode of Delivery of Adult Learners in Web-based, Classroom, and Blended Training" has been approved by the Institutional Review Board and is exempt from further review under 45 CFR 46.101.

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

The UNT IRB must review any modification you make in the approved project. **Federal policy 21 CFR 56.109(e) stipulates that IRB approval is for one year only.**

Please contact me if you wish to make changes or need additional information.

Sincerely,



Peter L. Shillingsburg
Chair
Institutional Review Board

PS:sb

APPENDIX B
RESEARCH CONSENT FORMS

**UNIVERSITY OF NORTH TEXAS COMMITTEE FOR
THE PROTECTION OF HUMAN SUBJECTS**

RESEARCH CONSENT FORM

Subject Name: _____

Date: _____

Title of Study: Learning style and preferred mode of delivery of adult learners in web-based, classroom, and blended training.

Principal Investigator: David McFeely

Co-investigators: N/A

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the proposed procedures. It describes the procedures, benefits, risks, and discomforts of the study. It also describes the alternative treatments that are available to you and your right to withdraw from the study at any time. It is important for you to understand that no guarantees or assurances can be made as to the results of the study.

Purpose of the study and how long it will last:

The purpose of this study is to investigate the possible relationship between preferred learning style and preference for training delivery mode. This study will examine the potential usefulness of considering learning style in determining the delivery method for training. The results of this study are relational in nature and are not intended to show a cause and effect relationship between learning style and preferred mode of delivery. Therefore, the results should be interpreted as limited and tentative pending further studies. The study will utilize the billing and technical support employees of NTT/VERIO in Dallas, Texas. The participants will receive three instructional sessions delivered in three methods: web-based, classroom, and blended instruction. The modules should take approximately 30-50 minutes each with a ten minute break between sessions. The total time for this study, including assessments and instruction, is approximately 3 hours.

Description of the study including the procedures to be used:

The subject content of this study is "Influencing Others Positively". The course content will address the connection between people's relationships and their ability to positively influence others, as well as demonstrate verbal and non-verbal clues in influencing. The modules covered are: What is influencing, non-verbal clues, and verbal clues. Each participant will be given Kolb's Learning Style Inventory to assess their preferred learning style. A learner background survey will also be administered which includes age, gender, level of education completed, and their expected preferred mode of delivery. The course will be delivered in varying order of (depending on group assignment): web-based, classroom, and blended (a mixed approach of classroom and web-based instruction). Finally, a survey assessing preferred mode of delivery will be administered after all three sessions are delivered.

Research Consent Form -Page 1 of 3 _____ Participant's initials

**UNIVERSITY OF NORTH TEXAS
RESEARCH CONSENT FORM (Continued)**

Description of procedures/elements that may result in discomfort or inconvenience:

This study involves no risk or violation of human rights.

Description of the procedures/elements that are associated with foreseeable risks:

There are no elements with foreseeable risks.

Benefits to the subjects or others:

The subjects and education and training institutions will benefit from this study. The subjects will benefit because they will receive a learning style assessment and information regarding their preferred learning style. Understanding your learning style can be helpful for: problem solving, working in teams, resolving conflict, and communicating at home and work. Along with this, the subjects will receive a course that is designed to make the participant aware of ways to improve their ability to positively influence others. This is important for any individual who is working in a customer support role. This study is also important for training institutions in that it investigates the learner characteristic of learning style which might relate to the preference for one delivery mode over another. The trend towards web-based instructional delivery in corporations is on the rise and companies are looking to make sure that their training dollars are effectively spent. Therefore, this study will reveal valuable results for considering learning style before determining the training delivery method.

Confidentiality of research records:

All information obtained in this study will be confidential and will not be used outside of this study. The results of the Learning Style Inventory as well as the two surveys will be used only to compare the preference for delivery methods with the different learning styles. Subjects' names will not be used to analyze the data. The researcher will use a coding system, which will randomly assign numbers for the subjects and use these numbers during the analysis process. This means that even the researcher of this study cannot identify the specific result for a specific subject.

Research Consent Form -Page 2 of 3 _____ Participant's initials

**UNIVERSITY OF NORTH TEXAS
RESEARCH CONSENT FORM (Continued)**

Review for protection of participants:

This research study has been reviewed and approved by the UNT Committee for the Protection of Human Subjects (940) 565-3940.

RESEARCH SUBJECTS' RIGHTS: I have read or have had read to me all of the above.

David McFeely has explained the study to me and answered all of my questions. I have been told the risks or discomforts and possible benefits of the study. I have been told of other choices of treatment available to me.

I understand that I do not have to take part in this study, and my refusal to participate or to withdraw will involve no penalty or loss of rights or benefits or legal recourse to which I am entitled. The study personnel may choose to stop my participation at any time.

In case there are problems or questions, I have been told I can call Dr. Michelle Wircenski, Major Professor, at telephone number (940) 565-2093.

I understand my rights as a research subject, and I voluntarily consent to participate in this study. I understand what the study is about and how and why it is being done. I have been told I will receive a signed copy of this consent form.

Subject's Signature

Date

Witnesses' Signature

Date

For the Investigator or Designee:

I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known benefits and risks of the research.

Principal Investigator's Signature

Date

Research Consent Form -Page 3 of 3

APPROVED BY THE UNT IRB
FROM 4/16/02 to 4/15/03
DS

APPENDIX C
PERMISSION FORMS

Dave McFeely

From: johnna_wallace@smartforce.com
Sent: Monday, March 11, 2002 4:35 PM
To: dmcfeely@verio.net
Subject: Permission to Distribute material for dissertation

SmartForce gives David McFeely the right to distribute SmartForce materials as part of his dissertation on Learning Style and Preferred Mode of Delivery of Adult Learners in Web Based, Blended and Classroom Training.

Johnna Wallace
Learning Manager, SmartForce
972-935-9227, office
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johnna_wallace@smartforce.com

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support@smartforce.com

David McFeely
1500 Chukka Dr. #906
Arlington, TX 76012

Johnna Wallace
Learning Manager
SmartForce
Dallas, TX
(office) 972-935-9227

April 11, 2002

Dear Johnna:

This letter is to confirm our recent e-mail conversation. I am completing a doctoral dissertation at the University of North Texas entitled "Learning Style and Preferred Mode of Delivery of Adult Learners in Web Based, Classroom, and Blended Training." I would like your permission to reprint in my dissertation excerpts from the following:

SmartForce e-Learning Company. (2000). Influencing Others Positively: Student Guide.
and

SmartForce e-Learning Company (2000). Influencing Others Positively: Facilitator Kit.

The excerpts to be reproduced from the Student Guide are: cover, introduction, Section 1: Influencing, Section 3: Non-verbal Techniques, and Section 4: Verbal Techniques.

The excerpts to be reproduced from the Facilitator Kit are: cover, introduction, Section 3: Non-verbal Clues, Section 5: Tone, and Section 6: Language.


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If these arrangements meet with your approval, please sign this letter where indicated below and return it to me at the address above. Thank you very much.

Sincerely,

David McFeely

PERMISSION GRANTED FOR THE
USE REQUESTED ABOVE:


Johnna Wallace

Date: 4-11-02

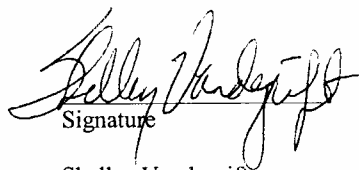
David McFeely
1500 Chukka Dr. #906
Arlington, TX 76012
RE: IRB Statement of Permission, UNT

April 4, 2002

Permission is given to David McFeely to perform a research project at our facility. This research is titled "*Learning style and preferred mode of delivery of adult learners in web-based, classroom, and blended training*" and involves training with the course titled "Influencing Others Positively" for the population of billing and technical support employees.

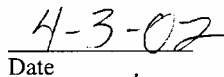
We understand that this research involves delivery of this course in three different modes: web-based, classroom, and blended training. Further, we understand that three assessment instruments will be utilized to help determine the relationship between learning style and preferred mode of delivery. The responses to these assessments are to remain confidential and will not be released to the company.

Employees will be randomly assigned to different groups. Each participant will be given a cover letter stating that they are involved in a research project sponsored by the University of North Texas and this company. There will not be any promotional opportunities based on participation in this research project. We feel there is no risk to participants. The curriculum for this research project is from SmartForce, an e-learning company, which NTT/VERIO has been licensed to deliver to its employees.



Signature

Shelley Vandegrift
Vice President
Business Solutions



Date

8700 N. Stemmons Freeway, Suite 211

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t: 214-583-6400 f: 214-583-6466

www.verio.com

APPENDIX D
LEARNER BACKGROUND SURVEY

Learner Background

Reference Number

Age: _____

Gender: _____

What is your highest level of education (✓ check one)?

_____ High school

_____ Some College

_____ College Graduate

From a strictly learning standpoint, which delivery method do you
EXPECT that you will prefer the most?

Please place a check (✓) next to ONE of the following:

_____ **Web-based training** (self-paced, computer-based instruction
without any instructor involvement)

_____ **Classroom training** (traditional classroom instruction with an
instructor and other students)

_____ **Blended training** (a combination of web-based training and
also some classroom instructor-facilitated exercises to reinforce
learning)

APPENDIX E
PREFERRED MODE OF DELIVERY SURVEY

Preferred Mode of Delivery

Reference Number

From a strictly learning standpoint, which delivery method did you prefer the most?

Please place a check (\checkmark) next to ONE of the following:

_____ **Web-based training** (self-paced, computer-based instruction *without* any instructor involvement)

_____ **Classroom training** (traditional classroom instruction with an instructor and other students)

_____ **Blended training** (a combination of web-based training and also some classroom instructor-facilitated exercises to reinforce learning)

Thank you for participating in this research study!

APPENDIX F
COURSE MATERIALS



INFLUENCING OTHERS POSITIVELY

Student Guide

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We'd like to hear from you

SmartForce endeavors to design and produce documentation that is comprehensive, accurate, and easy to use. However, there's always room for improvement. As a customer, we consider you the most important critic of our documentation. If you think there's anything in this guide that we could have done better, we'd like to hear from you. Please e-mail your comments to

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INTRODUCTION

Course aim

This course demonstrates a variety of key influencing techniques and emphasizes the importance of establishing a relationship with someone if you are attempting to positively influence them.

Competency statements

The **Competency statements** for **Influencing others positively** are listed below. References for Modules and Topics containing the content corresponding to the competencies are indicated.

Identifying the situations where influencing is used.	Module 1 Topic 1
Stating the different types of power that people sometimes exploit.	Module 1 Topic 2
Recognizing the effect of shortcuts and stereotypes when making decisions about people.	Module 2 Topic 1
Identifying non-verbal clues when influencing.	Module 3 Topic 1
Explaining why we should manage our physical, emotional and mental states when influencing.	Module 3 Topic 2
Identifying the types of language to avoid.	Module 4 Topic 1
Recognizing different examples of power words.	Module 4 Topic 1
Recognizing the different communication styles of the VACK model.	Module 4 Topic 3
Demonstrating four different types of influencing question techniques.	Module 5 Topic 1
Explaining the importance of reframing.	Module 5 Topic 2

Course outline

1. Influencing

- You can't not influence
- Manipulation and power

2. Relationships and influencing

- Shortcuts and stereotypes
- The power of liking
- Building relationships

3. Non-verbal techniques

- Non-verbal clues
- Physiology management

4. Verbal techniques

- Tone and language
- Intrapersonal factors
- The VACK model

5. Advanced influencing techniques

- Asking versus telling
- Reframing
- Behavioral flexibility

1

INFLUENCING

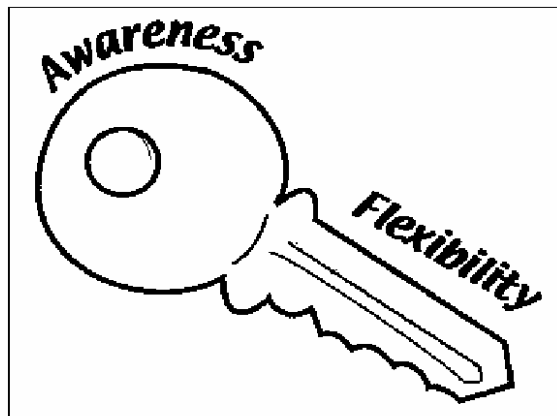
Topic 1: You can't not influence

Topic objective

By the end of this topic you will be able to identify the situations where influencing is used.

Awareness

Awareness and flexibility are two qualities that are needed to be an effective influencer.



Unless you have some awareness of a person's situation, beliefs and attitudes then you can't possibly hope to influence them positively.

Awareness requires excellent listening skills and the ability to identify and respond appropriately to verbal and non-verbal clues. It also requires a balance of interpersonal and intrapersonal skills.

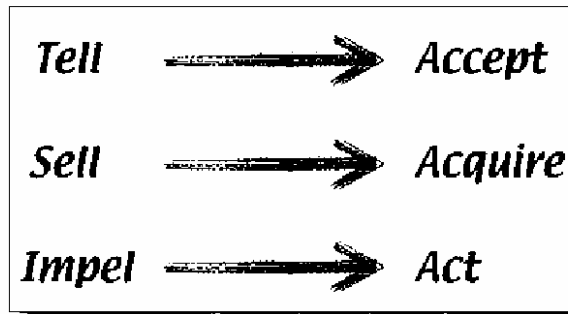
Interpersonal skills mean that you have an understanding of other people and how they relate to you.

Intrapersonal skills means that you possess self awareness.

Influencing applications

Influence is commonly used to tell someone something, sell a commodity or idea, or impel someone to act.

What you are doing in each of these situations is making the other person accept what you have to say, acquire what you have to offer or act on your advice.



You can't not influence

Whenever you communicate with someone, everything you do or don't do is influencing. Even ignoring someone and changing the subject are ways of using influence.

If you can't not influence, you should have some control over how you influence people.

Topic 2: Manipulation and power

Topic objective

By the end of this topic you will be able to state the different types of power that people sometimes exploit.

Manipulation

Manipulation is changing, stretching, or omitting the truth, or emphasizing one element of it, to suit your purpose or situation.

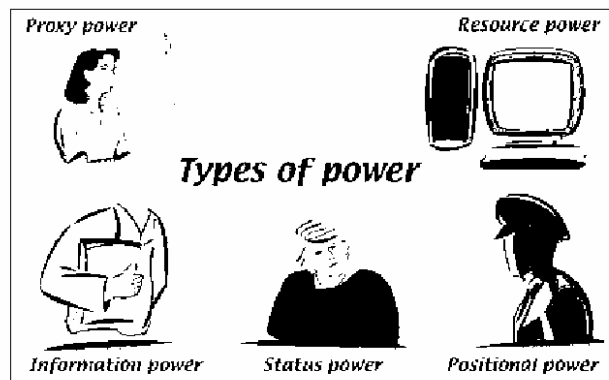
People often use manipulation when they are desperate for you to abide by their wishes. They are not concerned with what you will get out of the situation, only what they will achieve.

Manipulation is also characterized by the use of bribes, threats, and emotional blackmail.

Different types of power

Exploiting different types of personal power is also manipulative. Some of these types of power include:

- Resource power – people do as I require because I control the resources they desire.
- Information power – I can influence other people because I have access to the information they need.
- Positional power – I can influence others because I have a powerful position within the hierarchy.
- Status power – I can influence other people because I have status in the group, I am the oldest or the longest serving.
- Proxy power – People do as I require because I have friends in high places.



Legitimate use of power

Some types of power do have their place in certain circumstances. Positional power is very important in law enforcement and status and positional power is accepted in most organizations. In certain circumstances, the use of power can be appropriate, even essential.

Power and resentment

Manipulation and the misuse of power can cause resentment. Although they may achieve compliance in the short term they have the opposite effect in the long term. People will resist any future attempts by you to influence them, and may even try to block your ideas or actions.

Summary of Module 1

This module explained how influence is used and the difference between influence and manipulation.

3

NON-VERBAL TECHNIQUES

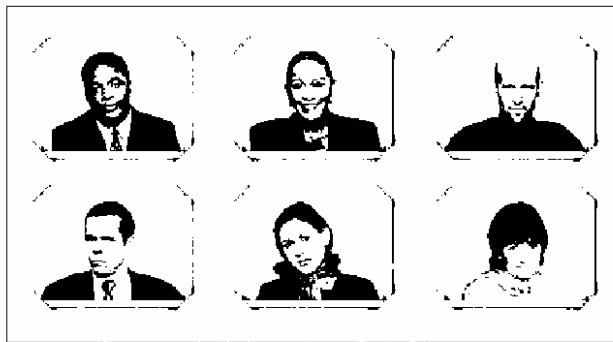
Topic 1: Non-verbal clues

Topic objective

By the end of this topic you will be able to identify non-verbal clues in yourself and others.

Types of non-verbal clues

We all respond to non-verbal clues and the opinions that we form as a result can have a significant effect on the outcome of the situation.

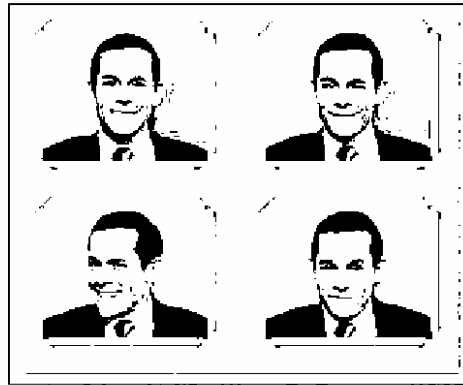


When we meet another person, we subconsciously assess their facial expression, physical appearance, dress, body language, and smile. Sometimes, these opinions create a negative impression and we tend to be suspicious of these people until they prove otherwise.

Facial expressions and smiles

Facial expressions are important when you are trying to influence someone. If you're careless about your expressions when you meet someone, you may create a poor impression. Then you will have to work twice as hard to counteract that impression.

A safe expression is an open and interested one, with or without a smile. This is because some smiles will actually work against you and do more harm than good.



It might be a good idea to ask your colleagues for some feedback on your own smile as you might be giving people a poor first impression without even realizing it.

Space invaders and handshakes

Most people recognize the personal boundaries of others and they try hard not to invade their space. However, some people are unable to recognize or appreciate the signals that other people give out and consequently become "space invaders".

You need to be able to assess people's responses to physical proximity and determine their comfort range. Try not to crowd the other person as they may feel threatened and will be unlikely to cooperate with you.

Handshakes are normally the only physical contact that you have with a person you have just met, so you need to be very careful about the type of grip that you use.

Take the person's hand firmly and confidently, but don't crush it. Shake it once or twice, then let it go.

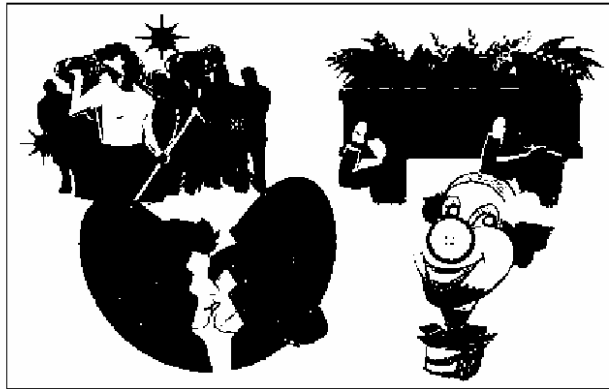


Culture awareness

How you greet people and interact with them will vary from culture to culture, so be aware of specific rules and customs.

Reading non-verbal clues

Reading a person's non-verbal clues is not a difficult thing, most of us do it intuitively. We intuitively know how to relate to a person's mood just like we know how to choose appropriate music.



The key to understanding non-verbal clues is awareness and taking the time to observe the other person. Sadly for some people, this is very difficult, as they get too caught up in their own thoughts and opinions to focus on anyone else.

Communication research indicates that during interpersonal face-to-face communication we utilize three mediums. Words, tone, and non-verbal clues. Words and tone affect rapport 5% and 25% respectively but our non-verbal clues account for up to 70%.

So, try to be aware of these non-verbal clues whenever you are attempting to influence someone, or the result may be very different from the one you need.

Topic 2: Physiology management

Topic objective

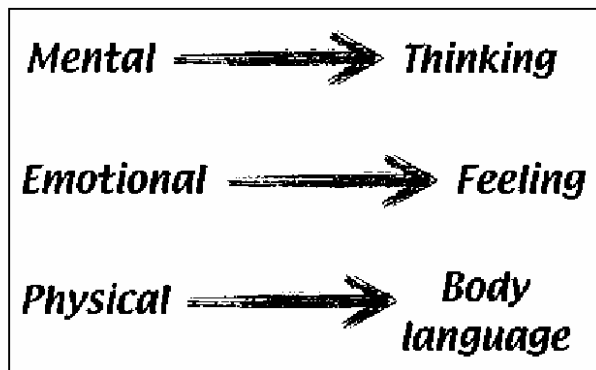
By the end of this topic you will be able to explain why we should manage our physical, emotional, and mental states.

Different state

When we communicate, we actually use three different states:

- Mental – thinking
- Emotional – feeling
- Physical – body language

The blending of the physical, mental, and emotional states occurs concurrently and influences the person with whom we communicate.



Changing your state

Physical gestures feed your emotional state so, by changing your physical state, you can often hasten the transition into a more positive state of mind.

The physical state is usually the easiest state to change which is very important as most people only have a limited amount of time.

State transference

State transference is where you influence other people to change their states.

If you attempt to communicate with someone when you are sullen or irritable, chances are that the person will respond in much the same manner. Just as you have the capacity to influence people's state in a negative way, you also have the capacity to influence them positively.

If someone is negative and depressed you can influence them unconsciously to become more positive, simply by sitting upright and speaking in a positive manner.



Recognizing serious problems

It is important to recognize the difference between someone who is stressed, or mildly depressed, and someone who has a serious problem.

Someone with a serious problem may not respond to state transference, they need more than empathy and support.

Summary of Module 3

This module examined why non-verbal techniques are important when trying to influence others positively. It is crucial to create a good first impression through your facial expressions and body language. You also need to be aware of your physical and emotional states and how you can use state transference to influence others.

4

VERBAL TECHNIQUES

Topic 1: Tone and language

Topic objective

By the end of this topic you will be able to recognize the difference between power and emotive words and benefit language.

Types of language to avoid

Sarcasm is when you say something but mean the opposite. Often, the key to sarcasm is your tone of voice. Sarcasm should be avoided because it is misleading and does nothing to help establish trust.



Similarly, name calling and judgmental statements make you appear highly critical and the person that you are trying to influence will be hesitant to trust you.

Finally, ordering someone to do something will often result in resistance.

Also, try to avoid overusing the words “always” and “never”. It’s rare that these words can be used with any accuracy, yet they are often stated as absolutes.

Tone of voice

The more attention you pay to a person’s tone and the emphasis they place on words, the more you can learn about their feelings and opinions and what is important to them.

Power words

These words are rich in meaning and evoke strong images and emotions. Power words are useful when you are trying to influence someone. They make people feel positive or negative about whatever you are trying to tell, sell, or impel them to do.

Benefit language

When we want something from another person, we need to ask ourselves, “what’s in it for them” and then communicate the benefits of taking this action to them. If it makes sense, then they are likely to agree.

Topic 2: Intrapersonal factors**Topic objective**

By the end of this topic you will be able to describe the different levels of disclosure.

Intrapersonal skills

If you possess intrapersonal skills then you have self-awareness. This means that you are able to see yourself as others see you.

Some people are unaware that their manner is irritating to other people. The self-image that they have in their mind can sometimes be entirely different from the image that other people have of them.

Because of their poor intrapersonal skills, and the fact that they are not particularly receptive to other people’s verbal and non-verbal clues, they rarely assess their behavior and tend to blame other people when they do not cooperate.



Influencing and intrapersonal skills

People with poor intrapersonal skills generally have trouble getting on with others, and sometimes conflict just escalates. Needless to say, they are not very good at positively influencing anyone.

Rates of disclosure

People have different rates of disclosure - what they are happy to talk about with others. Some people are very happy to divulge their life history to a total stranger, whereas others will maintain a considerable distance.

Both extremes of disclosure can cause problems when influencing. An underdiscloser may give the impression that they are trying to hide something and therefore trust can be difficult to establish with the person that they are trying to influence.

An overdiscloser can be very boring and they make people feel uncomfortable. Generally, people don't want to know intimate details about someone unless they have a medium to long term relationship with them.

An overdiscloser can also make you feel that you are expected to reciprocate and share your own details.

Accepting feedback

Someone with good intrapersonal skills will generally accept feedback positively. People with poor intrapersonal skills often reject feedback that they perceive to be negative, and hence miss the opportunity to grow.

Occasionally we do encounter bad feedback. For example, a person may be prejudiced against us in some way. In circumstances like this, we need to be able to recognize that the feedback is not appropriate and disregard it.



But in the majority of cases, the feedback we receive is objective. So, it should not be viewed as positive or negative. It is simply information to help us to do something better next time.

Although this is easier said than done, it is possible. People with good intrapersonal skills usually have accurate images of themselves and they realize that by rejecting appropriate feedback, they are rejecting the opportunity to learn.

Topic 3: The VACK model

Topic objective

By the end of this topic you will be able to recognize the different communication styles of the VACK model.

The VACK model

This is a model which explores people's preferred way of communicating. If you understand which style people prefer, then you can relate to them far more effectively. There are four main communication styles that people use to process information:

- Visual people - through seeing;
- Auditory people - through hearing;

- Cerebral people - though analyzing; and,
- Kinesthetic people - through feeling.

Eye movements when accessing memory

A person's style can be determined using a number of clues. The first clue is their eye movements when they are trying to remember something.

- Visual people tend to look upwards, usually to the left.
- Auditory people look sideways and may cock their head in that direction.
- Cerebral people look straight ahead and may appear blank.
- Kinesthetic people look down and may close their eyes.

Common words and phrase

Another clue to a person's communication style is the use of certain words or expressions.

Visual people :

Common words –

Picture, scene, visualize, insight, notice, hazy, focus, vivid, imagine.

Common expressions -

- "You'll look back on this."
- "Picture this..."
- "I see what you mean."



Auditory people :

Common words –

Say, hear, ask, rhythm, hearsay, sound, clear, harmony, call, discuss.

Common expressions -

- "That rings a bell."
- "That's unheard of!"
- "You and I are on the same wavelength."



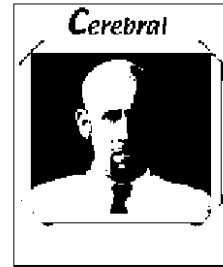
Cerebral people:

Common words -

Sense, think, know, understand, explain, decide, feedback, recognize.

Common expressions -

- "I can't make sense of it."
- "A plan of action."
- "I'm sorry but I can't think straight."

**Kinesthetic people :**

Common words -

Touch, rough, heavy, smooth, contact, grasp, pressure, handle, warm, firm.

Common expressions -

- "Hold on a second."
- "I will be in touch."
- "I just feel it in my bones."

**Presenting to the different styles**

Visual people respond to pictures, diagrams, and graphs – anything that appears to have an “instant picture”. They also like different colors, formats, and fonts. You could use the phrase “as you can see”, in your presentation.

Auditory people like you to talk to them, tell them about it. Too many visuals can be distracting for them but they don't have the same need for facts and statistics as cerebral people.

Cerebral people respond to facts, data, statistics, and information but make sure you have the proof to back up your claims.

Kinesthetic people like demonstrations where they can touch, feel, and make contact with something. You could use the phrase “as you can feel”, in your presentation. They also respond well to story telling and metaphors – anything that personalizes information.

Combinations of styles

The VACK model is a very useful influencing technique but remember there is no right or wrong style. They are merely preferences for modes of communication.

Similarly, we do not all sit neatly in one box. Some people have a strongly preferred style and a secondary style.

Keep the VACK model in mind next time you need to influence a group of people. Use a combination of different presentation techniques to engage all of the styles that may be present in the group.

Summary of Module 4

This module examined the use of tone and language in influencing as well as the need for intrapersonal skills. It also demonstrated the VACK model of communication styles.

APPENDIX G
FACILITATOR KIT



INFLUENCING OTHERS POSITIVELY

Facilitator Kit

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INTRODUCTION

Why have a Facilitator Kit?

The **Facilitator Kit** is designed to provide facilitator led exercises which enhance the transfer of skills learned in the course to the workplace.

The exercises in this kit will help participants:

- practice what they have learned
- understand important concepts covered in the course
- apply the skills acquired to their own working environment

Who will use this kit?

A facilitator can use this kit with groups of participants to reinforce important skills and strategies covered in **Influencing others effectively**.

How to use this kit

The following information is provided with each exercise:

- **Introduction** - the purpose of the exercise
- **Time** - the approximate duration of the exercise
- **Resources** - the materials required
- **Filename** - the name of the file found in the \text directory on the course CD-ROM for any worksheets required for participants
- **Exercise** - suggestions on how to conduct the exercise

How should participants prepare?

Each participant needs to complete the interactive self study part of **Influencing others effectively**.

3

NON-VERBAL CLUES

Introduction

This exercise encourages participants to think about how they respond to non-verbal clues and how their non-verbal clues are perceived by others.

Time

30 minutes

Resources

- Whiteboard
- Ruler

Exercise

The participants break into pairs. Each pair is instructed to find a part of the room where they have some walking space and enough room to put two chairs facing each other.

Part A

One person assumes the role of the guest, the other as the host. The guest walks into the “room” and the two participants greet one another. This should include addressing one another, shaking hands, taking their seats, and some non-specific introductory conversation.

At the end of the exercise, each person describes his or her reaction to the greeting, handshake, and body language.

Sample discussion questions

1. What did you think of the other person’s handshake?
2. Was it too aggressive or not firm enough?
3. Did the other person greet you by name?
4. Did they stand too close and invade your space?
5. Did their body language create a positive, negative or neutral impression?

Part B

In this part of the exercise, the participants are given the opportunity to practice each of the different types of handshakes. The group can be split into different pairs or continue with the same pairs.

The facilitator outlines each of the negative handshakes as well as the correct one and the pairs practice them.

The bone crusher

You hold the other person's hand in a vice like grip.

The thrasher

You shake the other person's hand far too enthusiastically and then refuse to let it go.

Reeling in

You pull the person toward you as you are shaking their hand.

Two handed smother

You place your other hand over the other person's hand as you are shaking it.

The cold fish

You limply extend your hand to the other person.

The correct handshake

You take the other person's hand, shake it once or twice then let it go.

After each person has attempted the handshakes, the group engages in discussion.

Sample discussion questions

1. Did you find any of the handshakes particularly offensive?
2. Have you ever received one of these handshakes?

Part C

In this part of the exercise, the participants are given the opportunity to practice each of the different levels of proximity to which people respond. The pairs are encouraged to try talking to one another from varying distances, starting from about three meters. Then move together gradually and when they both agree on a comfortable distance they measure it.

The entire group then reforms and each pair volunteer their preferred distance. The facilitator then works out the average for the group.

Sample discussion questions

1. How did you feel when the person was standing too close?
2. Were there any similarities between the different groups in the preferred distance?

Sample discussion question

Was it difficult to use the reverse physiology for each of the examples?

Part B

The participants work individually on this exercise.

They are asked to write out a list of their activities for the previous day, starting with getting out of bed, having breakfast and travelling to work.

Along side each of the activities they should indicate what frame of mind they need to be in, to manage the situation properly. For example; intense concentration or relaxed and casual.

At the end of the exercise the group discuss the findings.

Sample discussion questions

1. Was there much variation in your mental states on this particular day?
2. Did you find that you swapped from one extreme to the other?

5

TONE

Introduction

This exercise helps participants understand the effect that tone has on the way words are interpreted.

Time

10 minutes

Resources

- Whiteboard

Exercise

Part A

The facilitator writes the following sentence on the board.

I didn't say you could use that report!

Eight participants are selected, each one repeating the sentence but placing emphasis on a different word.

I didn't say you could use that report!

I **didn't** say you could use that report!

I didn't **say** you could use that report!

I didn't say **you** could use that report!

I didn't say you **could** use that report!

I didn't say you could **use** that report!

I didn't say you could use **that** report!

I didn't say you could use that **report!**

At the end of the exercise a group discussion takes place.

Sample discussion questions

1. How did the emphasis affect the way the sentence was interpreted?
2. For each example describe the interpretation

6

LANGUAGE

Introduction

This exercise allows participants to practice using power words.

Time

15 minutes

Resources

- Whiteboard

Exercise

The facilitator asks the participants to identify as many power words as they can. These are written on the whiteboard.

The facilitator then writes a number of situations on the whiteboard and participants are encouraged to think of sentences using power words that would help them to convince another person to agree with their demands. Suggestions are also written on the board.

Sample tasks

1. You want the other person to give you all of the information that they have collected about a particular competitor.
2. You need access to a database but this will mean that someone has to stop what they are doing to help you.
3. You want someone to buy your product.
4. You want to change a person's opinion of a colleague - positively and negatively.

Sample discussion questions

1. Do you use power words when you are trying to tell, sell or impel?
2. Do you think they increase the intensity of the emotion that you are trying to achieve?

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